
2018 Monitoring Report

Site 23 (PICA-065) Post Farm Landfill

Picatinny Arsenal, New Jersey

Prepared for



Prepared by

EA Engineering, Science, and Technology, Inc., PBC
Contract No. W91ZLK-13-D-0004-0009

June 2018

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U.S. Army

Prepared by



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LIST OF ACRONYMS AND ABBREVIATIONS

µg/L	Micrograms per liter
ARCADIS	ARCADIS U.S., Inc.
DBA	Drum Burial Area
EA	EA Engineering, Science, and Technology, Inc., PBC
ft amsl	Feet above mean sea level
NBA	Northern Burial Area
NJDEP	New Jersey Department of Environmental Protection
PICA	Picatinny Arsenal
RD	Remedial design
ROD	Record of Decision
SCL	Site cleanup level
Shaw	Shaw Environmental, Inc.
TAL	Target Analyte List
USACE	United States Army Corps of Engineers
USAEC	United States Army Environmental Command
USEPA	United States Environmental Protection Agency

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1. INTRODUCTION

EA Engineering, Science, and Technology, Inc., PBC (EA) has been retained by the United States Army Environmental Command (USAEC) to perform Installation Restoration Program activities at Picatinny Arsenal (PICA), located in Morris County, New Jersey. This work is being performed under the Environmental Remediation Multiple Award Indefinite Delivery/Indefinite Quantity Contract W91ZLK-13-D-0004 Delivery Order 0009, and will be overseen by the USAEC and the United States Army Corps of Engineers (USACE), under approval by the New Jersey Department of Environmental Protection (NJDEP), and United States Environmental Protection Agency (USEPA) Region 2.

1.1 SITE BACKGROUND

PICA is a 5,853-acre government-operated munitions research and development facility located in Morris County, New Jersey, approximately 40 miles west of New York City and 4 miles northeast of Dover, New Jersey (**Figure 1**).

Site 23 (PICA-065) is approximately 10.3 acres in size and is located near the southern corner of PICA along the top of a ridge that forms the eastern boundary of the arsenal. The Site consists of the Drum Burial Area (DBA) located in the southern end of the Site, the Northern Burial Area (NBA), and the Central Borrow Pit, a cleared flat area located in the middle of the Site. Both the DBA and the NBA are landfilled areas and are currently surrounded by perimeter fencing. The Central Borrow Pit is open, and currently contains a linear mound of brush, debris, and fill dirt.

Environmental impacts at Site 23 (PICA-065) are associated with historical disposal of drummed industrial waste including caustic paint stripper, used hydraulic oils, wastewater from oil reservoirs, cleaning solvents, fly ash, and solid waste. The area surrounding the Site is currently used for recreational activities, primarily hunting.

1.2 SCOPE OF WORK

As stated in the Record of Decision (ROD) (U.S. Army 2004), the selected response action for Site 23 (PICA-065) is long-term groundwater monitoring and implementation of land use controls. The long-term groundwater monitoring program for Site 23 (PICA-065), established in the Final Long-Term Monitoring Plan and Land Use Control Remedial Design (RD) (Shaw Environmental, Inc. [Shaw] 2006), requires groundwater monitoring on the following schedule:

- Quarterly for a minimum of eight quarters
- Annually thereafter, if concentrations of analytes in any well have not increased or have remained consistent over a span of eight or more consecutive quarters.

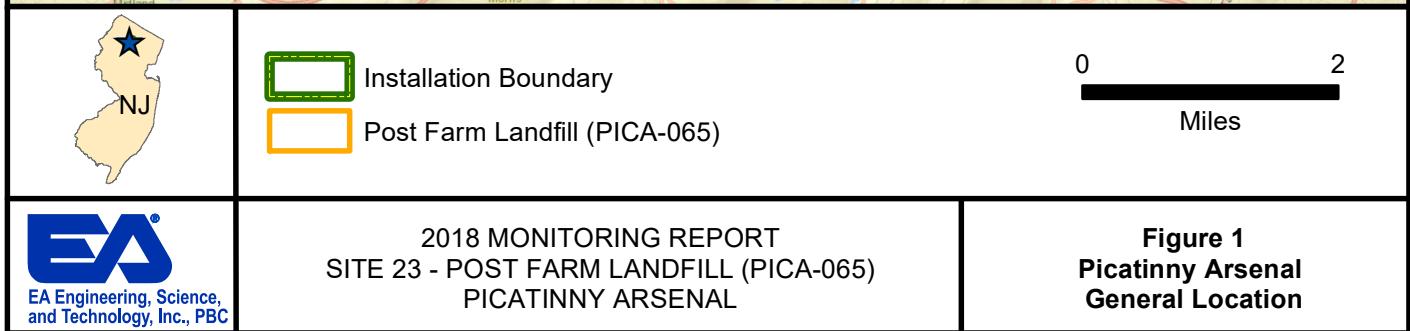
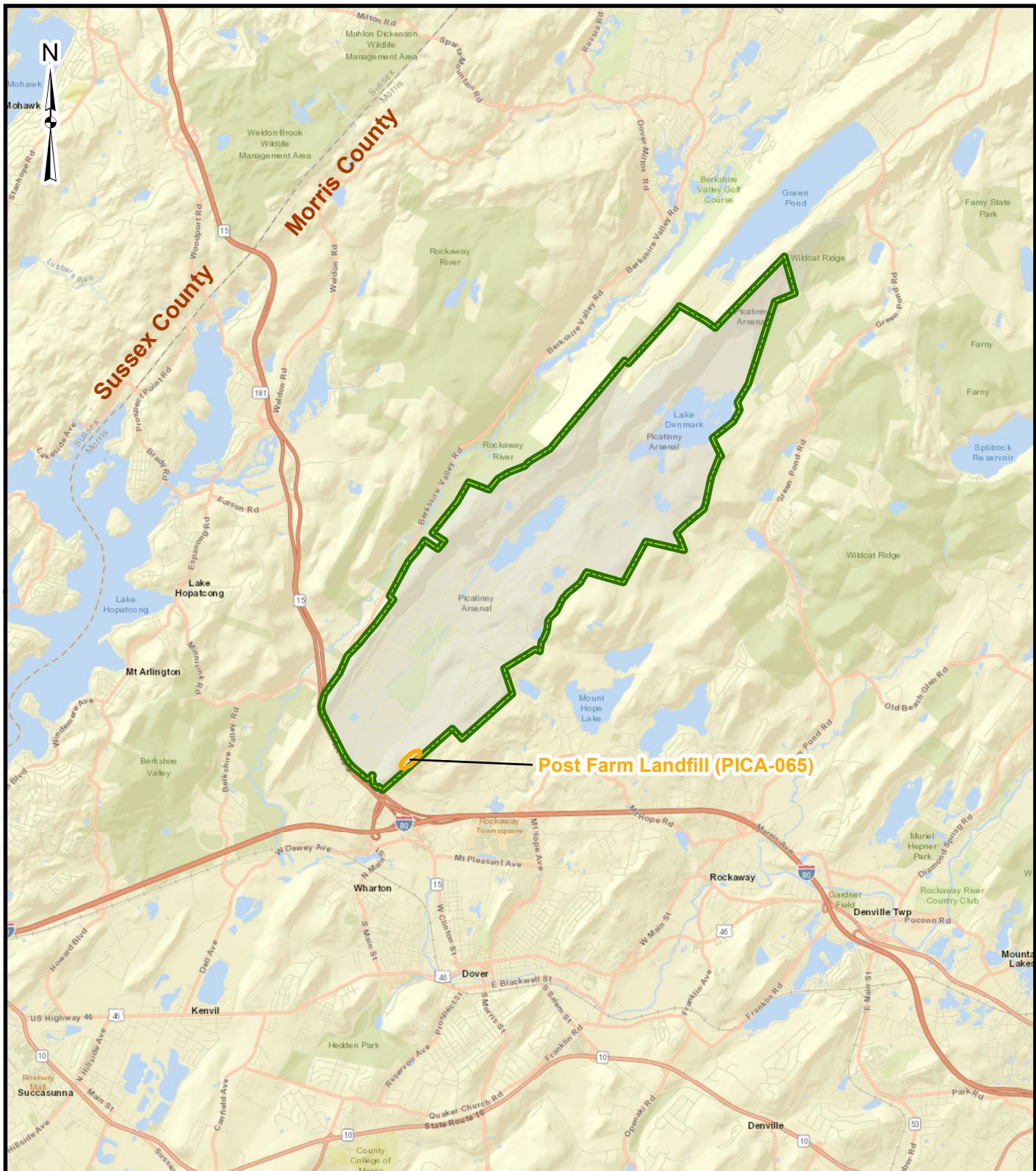
In accordance with the RD (Shaw 2006), statistical assessments were conducted in 2007, 2010, and 2015 following 2, 5, and 10 years of remedy implementation. In accordance with the exit strategy, a statistical analysis (Mann-Kendell) of long-term monitoring data is required at 5-year intervals. Pursuant to the statistical assessment performed in 2007 as part of the Final 2007

Annual Monitoring Report (ARCADIS U.S., Inc. [ARCADIS] 2009) and the monitoring schedule specified in the RD (Shaw 2006); the long-term monitoring frequency was reduced to annual sampling. Groundwater monitoring was conducted annually beginning in 2008 and continued through 2016.

Based on analytical results, previous statistical assessments conducted in 2010 and 2015, and remaining contaminants at the Site being limited to cadmium in one well with stable concentrations. the long-term monitoring program was reduced to include sixth-quarter sampling in 2016 (EA 2016). The monitoring program currently includes:

- Monitoring well C-DM23-03 for cadmium and field parameters
- Seep and spring locations (one of each) for *cis*-1,2-dichloroethene.

The long-term monitoring schedule for Site 23 (PICA-065) is presented in **Table 1**.



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Table 1 - Monitoring Schedule

Calendar Year		2003				2006		2007				2008				2009				2010			
Operation Year		First				Second				Third				Fourth				Fifth					
Sample Date		Jan-Mar	Apr-Jun	Jul-Sep	Oct-Dec	Apr-Jun	Jan-Mar	Apr-Jun	Jul-Sep	Oct-Dec	Jan-Mar	Apr-Jun	Jul-Sep	Oct-Dec	Jan-Mar	Apr-Jun	Jul-Aug	Sep-Dec	Jan-Mar	Apr-Jun	Jul-Aug	Sep-Dec	
Quarter (Calendar)		1st	2nd	3rd	4th	2nd	1st	2nd	3rd	4th	1st	2nd	3rd	4th	1st	2nd	3rd	4th	1st	2nd	3rd	4th	
Sample ID		Media																					
C-DM23-01	Groundwater	TAL Metals, Radiologicals	TAL Metals, Radiologicals	TAL Metals, Radiologicals, VOCs	TAL Metals, Radiologicals	NS	TAL Metals, Radiologicals	TAL Metals, Radiologicals	TAL Metals, Radiologicals	TAL Metals, Radiologicals	NS	NS	Radium-226	NS	NS	NS	Radium-226	NS	NS	NS	Radium-226	NS	
C-DM23-02	Groundwater	TAL Metals, Radiologicals	TAL Metals, Radiologicals	TAL Metals, Radiologicals, VOCs	TAL Metals, Radiologicals	NS	TAL Metals, Radiologicals	TAL Metals, Radiologicals	TAL Metals, Radiologicals	TAL Metals, Radiologicals	NS	NS	Cadmium and Radium-226	NS	NS	NS	Cadmium and Radium-226	NS	NS	NS	Cadmium and Radium-226	NS	
C-DM23-03	Groundwater	TAL Metals, Radiologicals	TAL Metals, Radiologicals	TAL Metals, Radiologicals, VOCs	TAL Metals, Radiologicals	NS	TAL Metals, Radiologicals	Radiologicals	TAL Metals, Radiologicals	TAL Metals, Radiologicals	NS	NS	Cadmium	NS	NS	NS	Cadmium	NS	NS	NS	Cadmium	NS	
C-MW23-1B	Groundwater	TAL Metals, Radiologicals	TAL Metals, Radiologicals	TAL Metals, Radiologicals, VOCs	TAL Metals, Radiologicals	NS	TAL Metals, Radiologicals	TAL Metals, Radiologicals	TAL Metals, Radiologicals	TAL Metals, Radiologicals	NS	NS	gross beta	NS	NS	NS	gross beta	NS	NS	NS	gross beta	NS	
C-MW23-4B	Groundwater	TAL Metals, Radiologicals, VOCs	TAL Metals, Radiologicals	TAL Metals, Radiologicals, VOCs	TAL Metals, Radiologicals, VOCs	NS	TAL Metals, Radiologicals, VOCs	NS	NS	Radium-226	NS	NS	NS	Radium-226	NS	NS	NS	Radium-226	NS				
C-MW23-5B	Groundwater	TAL Metals, Radiologicals	TAL Metals, Radiologicals	TAL Metals, Radiologicals, VOCs	TAL Metals, Radiologicals	NS	TAL Metals, Radiologicals	TAL Metals, Radiologicals	TAL Metals, Radiologicals	TAL Metals, Radiologicals	NS	NS	Radium-226	NS	NS	NS	Radium-226	NS	NS	NS	Radium-226	NS	
C-MW-14 ^(a)	Groundwater	NS	NS	NS	TAL Metals, Radiologicals	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	
C-23-MW-001	Groundwater	TAL Metals, Radiologicals, VOCs	TAL Metals, Radiologicals	TAL Metals, Radiologicals, VOCs	NS	NS	Radium-226	NS	NS	NS	Radium-226	NS	NS	NS	Radium-226	NS							
C-23-MW-002	Groundwater	TAL Metals, Radiologicals, VOCs	TAL Metals, Radiologicals	TAL Metals, Radiologicals, VOCs	NS	NS	Radium-226	NS	NS	NS	Radium-226	NS	NS	NS	Radium-226	NS							
C-23-MW-003	Groundwater	TAL Metals, Radiologicals, VOCs	TAL Metals, Radiologicals	TAL Metals, Radiologicals, VOCs	TAL Metals, Radiologicals	Radiologicals	TAL Metals, Radiologicals, VOCs	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS				
C-23-MW-004	Groundwater	TAL Metals, Radiologicals	TAL Metals, Radiologicals	TAL Metals, Radiologicals, VOCs	TAL Metals, Radiologicals	NS	TAL Metals, Radiologicals	TAL Metals, Radiologicals	TAL Metals, Radiologicals	TAL Metals, Radiologicals	NS	NS	Radium-226	NS	NS	NS	Radium-226	NS	NS	NS	Radium-226	NS	
C-MW23-1B ^(b)	Groundwater	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	
Seep	Surface Water	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	cis-1,2-DCE	NS	NS	NS	cis-1,2-DCE	NS	NS	NS	cis-1,2-DCE	NS	
Spring	Surface Water	TAL Metals, Radiologicals, VOCs	NS	NS	VOCs	VOCs	NS	NS	NS	NS	NS	NS	cis-1,2-DCE	NS	NS	NS	cis-1,2-DCE	NS	NS	NS	cis-1,2-DCE	NS	

(a) C-MW-14 is historically dry; therefore no samples have been collected. Monitoring well C-MW23-1B replaced this location in 2013.

(b) C-MW23-1B was added to the monitoring regimen to replace C-MW-14 during the 2013 calendar year.

= Completed.
= Planned.

Notes:

cis-1,2-DCE = cis-1,2-Dichloroethene.

NS = Not sampled.

NR = Not required as part of current monitoring program.

TAL = Target analyte list.

VOCs = Volatile organic compounds.

TAL Metals by United States Environmental Protection Agency (USEPA) SW-846 Method 3010A/6010B and 7470A.

Radiologicals (gross alpha and gross beta) by USEPA 900.0.

Radiologicals (Alpha Spectroscopy Radioisotopes) by USEPA 901.1, 903.0, 904.0, and 908.0.

Radiologicals (Gamma Spectroscopy Radioisotopes) by USEPA 901.1 (modified).

VOCs by USEPA SW-846 Method 5030B/8260B.

Table 1 - Monitoring Schedule

Calendar Year		2011				2012				2013				2014				2015				2016			
Operation Year		Sixth				Seventh				Eighth				Ninth				Tenth				Eleventh			
Sample Date		Jan-Mar	Apr-Jun	Jul-Aug	Sep-Dec	Jan-Mar	Apr-Jun	Jul-Aug	Sep-Dec	Jan-Mar	Apr-Jun	Jul-Aug	Sep-Dec	Jan-Mar	Apr-Jun	Jul-Aug	Sep-Dec	Jan-Mar	Apr-Jun	Jul-Aug	Sep-Dec	Jan-Mar	Apr-Jun	Jul-Aug	Sep-Dec
Quarter (Calendar)		1st	2nd	3rd	4th	1st	2nd	3rd	4th	1st	2nd	3rd	4th	1st	2nd	3rd	4th	1st	2nd	3rd	4th	1st	2nd	3rd	4th
Sample ID	Media																								
C-DM23-01	Groundwater	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
C-DM23-02	Groundwater	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
C-DM23-03	Groundwater	NS	NS	Cadmium	NS	NS	Cadmium	NS	NS	NS	NS	Cadmium	NS	NS	Cadmium	NS	NS	NS	Cadmium	NS	NS	NS	Cadmium	NS	NS
C-MW23-1B	Groundwater	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
C-MW23-4B	Groundwater	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
C-MW23-5B	Groundwater	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
C-MW-14 ^(a)	Groundwater	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
C-23-MW-001	Groundwater	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
C-23-MW-002	Groundwater	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
C-23-MW-003	Groundwater	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
C-23-MW-004	Groundwater	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
C-MW23-1B ^(b)	Groundwater	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	TAL Metals, Radiologicals	NS	NS	TAL Metals, Radiologicals	NS	NS	NS	TAL Metals, Radiologicals	NS	NS	NS	NR	NS	NS
Seep	Surface Water	NS	NS	cis-1,2-DCE	NS	NS	NS	cis-1,2-DCE	NS	NS	NS	cis-1,2-DCE	NS	NS	cis-1,2-DCE	NS	NS	cis-1,2-DCE	NS	NS	cis-1,2-DCE	NS	NS	cis-1,2-DCE	NS
Spring	Surface Water	NS	NS	cis-1,2-DCE	NS	NS	cis-1,2-DCE	NS	NS	cis-1,2-DCE	NS	cis-1,2-DCE	NS	NS	cis-1,2-DCE	NS	NS	cis-1,2-DCE	NS	NS	cis-1,2-DCE	NS	NS	cis-1,2-DCE	NS

(a) C-MW-14 is historically dry; therefore no samples have been collected. Monitoring well C-MW23-1B replaced this location in 2013.

(b) C-MW23-1B was added to the monitoring regimen to replace C-MW-14 during the 2013 calendar year.

= Completed.

= Planned.

cis-1,2-DCE = cis-1,2-Dichloroethene.

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VOCs = Volatile organic compounds.

TAL Metals by United States Environmental Protection Agency (USEPA) SW-846 Method

Radiologicals (gross alpha and gross beta) by USEPA 900.0.

Radiologicals (Alpha Spectroscopy Radioisotopes) by USEPA 901.1, 903.0, 904.0, and 908.0.

Radiologicals (Gamma Spectroscopy Radioisotopes) by USEPA 901.1 (modified).

VOCs by USEPA SW-846 Method 5030B/8260B.

Table 1 - Monitoring Schedule

Calendar Year		2017				2018				2019			
Operation Year		Twelfth				Thirteenth				Fourteenth			
Sample Date		Jan-Mar	Apr-Jun	Jul-Aug	Sep-Dec	Jan-Mar	Apr-Jun	Jul-Aug	Sep-Dec	Jan-Mar	Apr-Jun	Jul-Aug	Sep-Dec
Quarter (Calendar)		1st	2nd	3rd	4th	1st	2nd	3rd	4th	1st	2nd	3rd	4th
Sample ID	Media												
C-DM23-01	Groundwater	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
C-DM23-02	Groundwater	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
C-DM23-03	Groundwater	NS	NS	NS	NS	NS	Cadmium	NS	NS	NS	NS	NS	Cadmium
C-MW23-1B	Groundwater	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
C-MW23-4B	Groundwater	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
C-MW23-5B	Groundwater	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
C-MW-14 ^(a)	Groundwater	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
C-23-MW-001	Groundwater	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
C-23-MW-002	Groundwater	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
C-23-MW-003	Groundwater	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
C-23-MW-004	Groundwater	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
C-MW23-1B ^(b)	Groundwater	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Seep	Surface Water	NS	NS	NS	NS	NS	cis-1,2-DCE	NS	NS	NS	NS	NS	cis-1,2-DCE
Spring	Surface Water	NS	NS	NS	NS	NS	cis-1,2-DCE	NS	NS	NS	NS	NS	cis-1,2-DCE

(a) C-MW-14 is historically dry; therefore no samples have been collected. Monitoring well C-MW23-1B replaced this location in 2013.

(b) C-MW23-1B was added to the monitoring regimen to replace C-MW-14 during the 2013 calendar year.

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Radiologicals (Alpha Spectroscopy Radioisotopes) by USEPA 901.1, 903.0, 904.0, and 908.0.

Radiologicals (Gamma Spectroscopy Radioisotopes) by USEPA 901.1 (modified).

VOCs by USEPA SW-846 Method 5030B/8260B.

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2. SAMPLING ACTIVITIES

This section summarizes the long-term monitoring activities conducted as part of the 2018 sampling event. Field forms are provided as **Appendix A**.

2.1 GROUNDWATER DEPTH MEASUREMENTS

Water level, depths of well and well assessment forms in the monitoring well network, consisting of ten wells, were measured on 14 June 2018. The groundwater elevations for June 2018 are presented in **Table 2** and a groundwater elevation contour map is provided as **Figure 2**.

Table 2 Well Specification and Groundwater Elevation Summary

Well ID	Well Diameter (inches)	Aquifer	Measuring Point Elevation (ft amsl)	Screen Interval (ft amsl)	4/18/18	
					DTW (ft bmp)	GWE (ft amsl)
C-DM23-01	4	Bedrock	853.26	826.26 - 816.26	17.88	835.38
C-DM23-02	4	Bedrock	838.84	805.84 - 795.84	35.18	803.66
C-DM23-03	4	Bedrock	880.58	845.58 - 835.58	35.66	844.92
C-MW23-1B	4	Bedrock	852.14	824.14 - 814.14	10.48	841.66
C-MW23-4B	4	Bedrock	832.56	794.56 - 784.56	30.35	802.21
C-MW23-5B	4	Bedrock	837.85	819.85 - 809.85	18.82	819.03
C-MW-14	4	Overburden	852.03	---	30.80	821.23
C-23-MW-001 ^(a)	4	Bedrock	813.57	774.67 - 764.67	DRY	DRY
C-23-MW-002	4	Bedrock	814.78	785.78 - 775.78	DRY	DRY
C-23-MW-004	4	Bedrock	836.00	793.50 - 783.50	19.54	816.46

Notes:

(a) Measuring point elevation estimated.

--- = Not available.

ft amsl = Feet above mean sea level.

ft bmp = Feet below measuring point.

DTW = Depth to water.

GWE = Groundwater elevation.

2.2 GROUNDWATER AND SURFACE WATER SAMPLING

The 2018 groundwater monitoring event consisted of collection of one groundwater sample from monitoring well C-DM23-03. The groundwater sample was collected on 18 April 2018 using the low flow sampling method. The sample was submitted to SGS Accutest Laboratories of New England, located in Marlborough, Massachusetts, for analysis of cadmium by USEPA Method 6020/6010. The following water quality parameters were also measured using a handheld multi-parameter instrument: pH, specific conductance, temperature, dissolved oxygen, and oxidation reduction potential.

The following scheduled activities were not conducted during 2018:

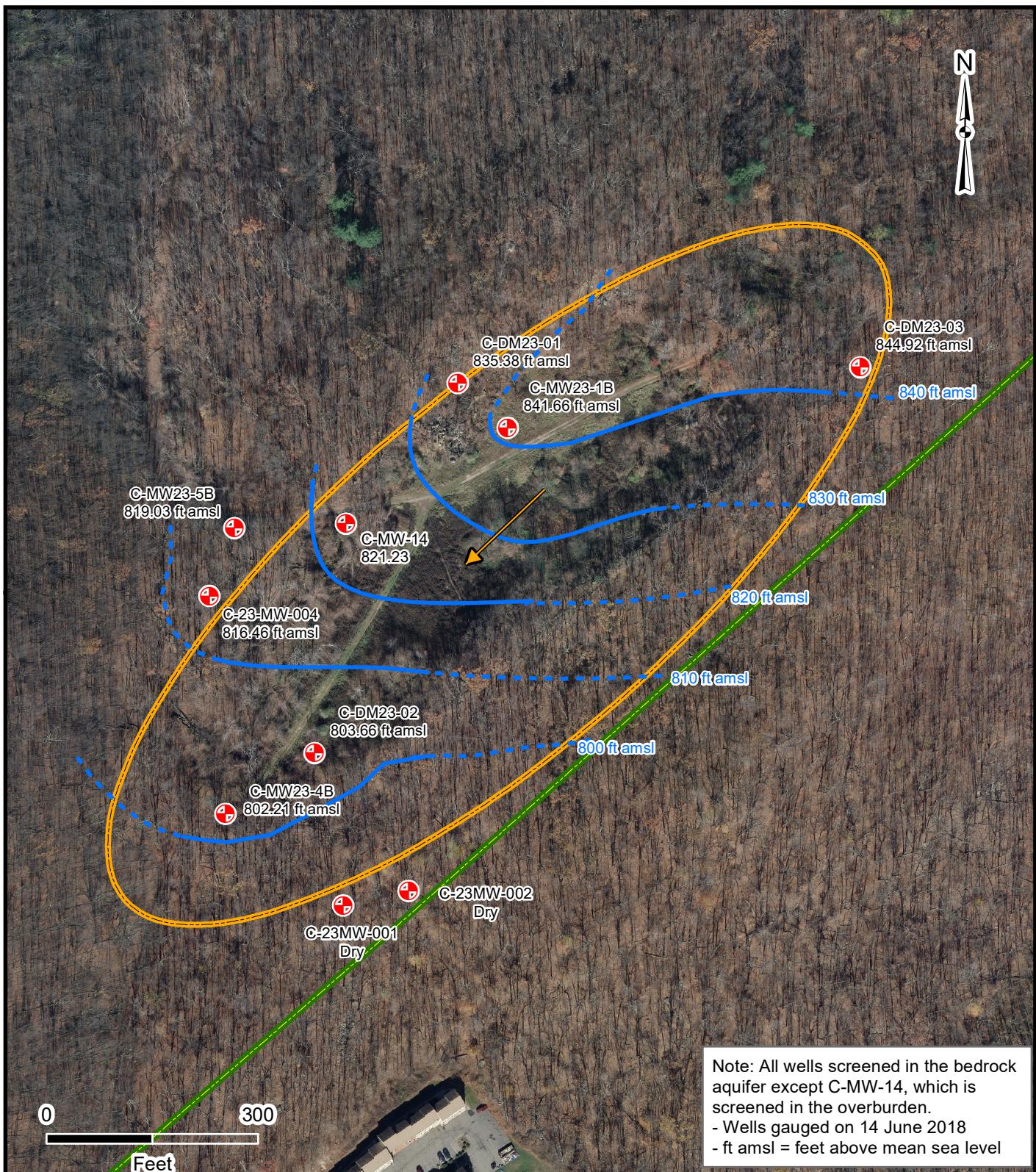
- Seep and spring sampling for *cis*-1,2-dichloroethene. The seep and spring samples were not collected as no seeping of groundwater and no surface water was observed in the areas depicted on the Site map. Based on a review of historical analytical data for the

seep and spring locations, samples have only been collected in these locations during the first and fourth quarters of 2003, and the second quarter of 2006.

2.3 DATA VALIDATION AND USABILITY

All data collected were third party validated in accordance with USEPA National Functional Guideline for Organic Data Review, dated August 2014. The validation criteria for long-term monitoring data include a review of the laboratory report narrative for noted deficiencies and the potential impact to data usability. Therefore, a review of chain-of-custodices, sample preservation, sample receipt logs, and a review of quality control parameters were performed for all data packages. No major deficiencies were identified during the data validation; therefore, no additional review was performed. A copy of the data validation report is included with

Appendix B.



 EA Engineering, Science, and Technology, Inc., PBC	2018 MONITORING REPORT SITE 23 - POST FARM LANDFILL (PICA-065) PICATINNY ARSENAL	Figure 2 Groundwater Elevation Contour Map
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3. LONG-TERM MONITORING RESULTS

Results from the 2018 groundwater sampling event are summarized below. Groundwater monitoring well locations and 2018 sample results are presented on **Figure 3**. Laboratory analytical reports and data validation reports are provided in **Appendix B**.

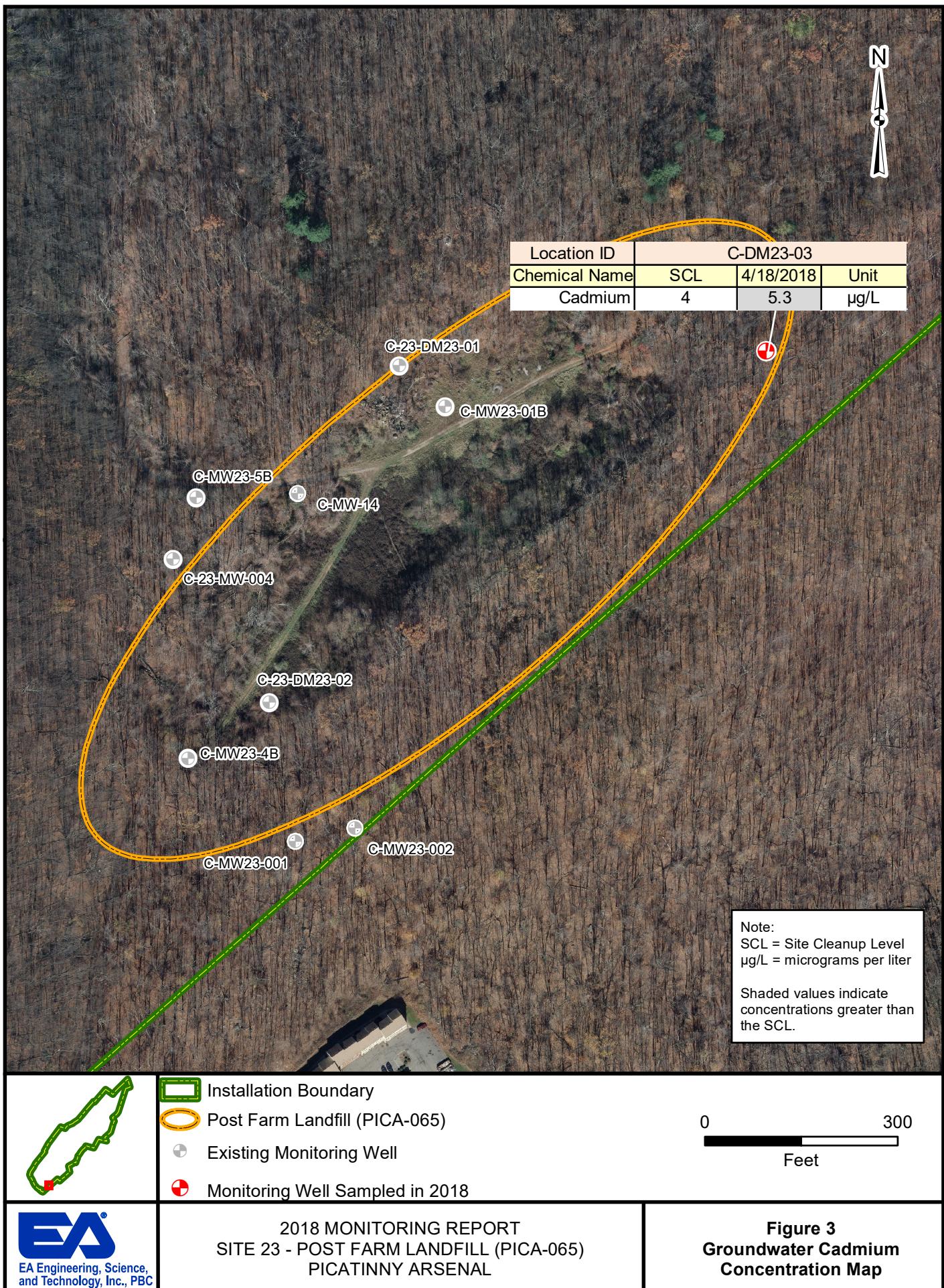
3.1 GROUNDWATER ELEVATIONS

Historical groundwater elevation data indicate that groundwater flows generally to the southwest. Groundwater elevations collected in June 2018 ranged from 844.92 feet above mean sea level (ft amsl) at C-DM23-03 to 802.21 ft amsl at C-MW23-4B. Depth to groundwater measurements and corresponding groundwater elevations are provided in **Table 2** and groundwater contours are provided on **Figure 2**.

3.2 GROUNDWATER MONITORING RESULTS

Cadmium was detected in C-DM23-03 at a concentration of 5.3 micrograms per liter ($\mu\text{g/L}$), which is greater than the SCL of 4 $\mu\text{g/L}$. Historical concentrations of cadmium at C-DM23-03 are provided in **Table 3**. Groundwater quality parameters for the sampling event are provided in **Table 3**.

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Table 3 Groundwater Monitoring Results

Location ID		Sample Date	C-DM23-03											
Units	PICA 065 SCLs		10/21/2008	11/18/2009	10/8/2010	9/9/2011	9/11/2012	1/8/2014 ¹	7/8/2014	9/21/2015	7/7/2016	7/7/2016	4/18/2018	4/18/2018
COC														
Cadmium	µg/L	4	4.15 J	4.79 J	4.72 J	7.35 J	5.88	0.518 J	5.61 J	6.00	5.00	5.00	5.3	5.3
Water Quality Field Parameters														
Dissolved Oxygen	mg/l	---	8.22	9.63	9.62	0.23	8.74	9.86	0.32	4.1	6.68	7.73		
Oxidation Reduction Potential	mV	---	130.7	-234.3	222.5	266	256	99.5	241	279	234	308		
pH	S.U.	---	5.51	5.06	5.57	5.05	4.99	9.55	5.65	5	5.34	6.74		
Turbidity	n.t.u	---	0	1.69	0.14	2.72	1.6	0	22	29.4	4.96	7.99		
Specific Conductance	mScm ⁻¹	---	0.266	0.163	0.186	0.201	0.190	0.151	0.228	0.18	0.218	0.267		
Temperature	°C	---	11.34	15.25	10.46	11.55	8.33	9.58	12.35	11.74	16.17	10.15		

Notes:

¹C-DM23-3 was inadvertently not sampled during the 2013 calendar year; therefore a sample was collected January 2014 to provide as near a representative 2013 sample as possible. This location was sampled again during in July 2014 as part of the 2014 long-term monitoring event.

²Analytical results in the 2013 and 2014 Annual Reports were presented as being in micrograms per liter; however, the concentrations were in milligrams per liter.

Values exceeding the applicable screening criterion are boldfaced and shaded.

"---" = Not applicable.

mV = Millivolt.

°C = Degrees Celsius.

n.t.u = Nephelometric turbidity units.

µg/L = Microgram per liter.

SCL = Site cleanup level.

cfs = Cubic feet per second.

S.U. = Standard units.

COCs = Constituents of concern.

J = Indicates an estimated result.

mg/l = Milligram per liter.

U = Indicates analyte was analyzed for but not detected.

mScm⁻¹ = Millisiemens per centimeter.

mSm⁻¹ = Millisiemens per meter.

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4. EVALUATION OF DATA TRENDS

A cadmium trend plot of C-DM23-03 is provided within **Appendix C**. Cadmium concentrations have generally been stable with minor fluctuations since the start of long-term monitoring. Statistical analysis of long-term monitoring data is required at 5-year intervals, with the most recent evaluation completed in 2015. Results of the 2015 Mann-Kendall trend analysis did not identify a significant increasing or decreasing trend. There was a notable decline in cadmium concentrations in the groundwater sample collected at C-DM23-03 in January 2014 (0.518 µg/L). In the four subsequent sampling events, including April 2018, concentrations of cadmium have returned to concentrations consistent with historical results. Although cadmium was detected at a concentration greater than the SCL of 4.0 µg/L in groundwater samples collected at C-DM23-03 from 2008 through 2012, in 2014 through 2016, and in 2018, concentrations have not exceeded the historical maximum concentration (7.8 µg/L) detected during the first quarterly sampling event (5 February 2003). Furthermore, it should be noted that the trigger value for cadmium, as specified in the RD, is 18.7 µg/L. Based on review of data collected to date, cadmium concentrations in C-DM23-03 are not expected to exceed the trigger value.

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5. REMEDY PERFORMANCE AND FUTURE ACTIONS

At the start of long-term monitoring (first quarter 2003) there were 11 groundwater monitoring wells included in the long-term monitoring program. Based upon the results of the statistical analysis conducted in 2007 and 2010, nine of the eleven wells were removed from the groundwater sampling program. A tenth well was removed from the long-term monitoring program in 2015. The remaining well in the monitoring program, C-DM23-03, is sampled on a sixth quarter frequency. The duration and frequency of monitoring (greater or lesser) is subject to change based upon evaluation of the data collected and agreement by USEPA and the NJDEP. The current long-term monitoring schedule is provided in **Table 1**.

The sixth quarter sampling results at C-DM23-03 were evaluated against the following conditions and are presented in **Table 4**:

- Condition A: Removal of wells/analytes from monitoring based on consistent observation of concentrations less than SCLs.
- Condition B: Continue monitoring if constituent concentrations at a sampling point are “consistent” over eight or more consecutive periods or concentrations are not increasing over that period.
- Condition C: Investigate more aggressive remedial alternatives if average constituent concentrations for two consecutive periods are greater than the “trigger” value for cadmium ($18.7 \mu\text{g/L}$) and concentrations are increasing at one or more sampling points. Statistically significant increases will be determined using the Mann-Kendall test during the 5-year statistical assessment.

Concentrations of cadmium in C-DM23-03 are greater than the SCL and remain stable, consistent with historical detections. Concentrations of cadmium have not been observed to be greater than the trigger value. C-DW23-03 will continue to be monitored with the next sampling event scheduled for 4th Quarter 2019 (**Table 1**).

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Table 4 Exit Strategy Analysis

Well	Media	Current Long-Term Monitoring Program	Condition A		Condition B		Condition C		Long-Term Monitoring Program Revision	Notes
			Measurement for Analyte is Above SCLs	If Yes, which Analyte?	Measurements for Analyte at a Sampling Point are Consistent Over Eight or More Periods or Are Not Increasing	If Increasing, which Analytes?	Average Concentration for Analyte for Two Consecutive Periods are Above "Trigger Value"	If Yes, which Analyte?		
C-DM23-03	Groundwater	TAL Metals (Cadmium only)	Yes	Cadmium	No trend	NA	No	NA	None	Sample every 6th Quarter
Seep	Surface Water	VOCs (cis-1,2-DCE only)	ND	NA	NA	NA			None	Area will continue to be inspected and sampled, if located, concurrent with groundwater sampling.
Spring	Surface Water	VOCs (cis-1,2-DCE only)	No ^(a)	NA	NA	NA			None	Area will continue to be inspected and sampled, if located, concurrent with groundwater sampling.

Notes:

(a) Based on three sample events conducted prior to 2012.

NA = Not applicable.

ND = No data.

TAL = Target analyte list.

VOC = Volatile organic compound.

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6. REFERENCES

ARCADIS U.S., Inc. (ARCADIS). 2009. *Final 2007 Annual Monitoring Report for Site 23 (PICA-065) Post Farm Landfill*. December.

EA Engineering Science and Technology, PBC. Inc., 2016. *2016 Annual Monitoring Report Site 23 (PICA-065) Post-Farm Landfill*. September.

Shaw Environmental, Inc. (Shaw). 2006. *Final Long Term Monitoring Plan and Land Use Control Remedial Design for Site 23 (PICA-065) The Post Farm Landfill, Picatinny Arsenal, New Jersey*. December.

U.S. Army. 2004. *Record of Decision for Site 23 (PICA-065) Post Farm Landfill, Picatinny Arsenal, New Jersey*. Final. August.

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Appendix A

Field Forms

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EPA Region 2 Superfund Well Assessment Checklist

Owner Well ID: C-23MW-001

Facility Information

Site Name:	Picatinny Arsenal	Area: Post Farm	Site:
Site Address:	North East Office Garrison Bldg 319, Picatinny, NJ 07806		
Site County:	Morris		
Site State:	New Jersey		
EPA Site ID Number:	NJ3210020704		
Site Owner:	US Department of Army Picatinny Arsenal		
EPA Project Manager:	Mr. William Roach, USEPA Region II		

Well Location Information

State Well Permit No: _____

Well Tag ID and Condition: _____

Well Installation Date: _____

	From Log	From GPS₁	
Ground Surface Elevation	_____	N/A	
Latitude	_____	N/A	
Longitude	_____	N/A	
Northing (State Plane)	_____	N/A	
Easting (State Plane)	_____	N/A	

Cross Streets (if applicable): _____

GPS Instrument used: ₁ N/A

Datum: N/A

Accuracy / Precision: N/A

Well Construction Details

Type of well (circle one)

Flush Mount

Stick up

Multilevel Well ₂

Well lock / Security type:

locked

Elevation (top of inner casing):

steel

Surface protective casing material:

6"

Surface casing diameter:

4" PVC

Well diameter and Casing material:

—

Well depth (as installed):

17.12

Well depth (as measured):

3.15

Well Stick Up Height (as measured):

—

Screen interval:

—

Open hole interval:

—

Depth to water:

DRY

Date: 6/14/18

Time: 0930

¹ Picatinny wells will not be resurveyed by GPS unless existing Northing & Easting coordinates from prior survey efforts are not available or other conditions warrant resurveying.

² If multilevel well please see attached worksheet.

N/A = Not Applicable

— = Not Available

Well Headspec Readings

PID/FID Reading taken inside top of casing (if applicable): N/A ppm
Multi-gas/CGI meter Readings taken (if applicable): ^a

LEL:	<u>N/A</u>	% LEL
O ₂ :	<u>N/A</u>	40% Vol.
CO:	<u>N/A</u>	ppm
H ₂ S:	<u>N/A</u>	ppm

Do readings indicate if unsafe conditions exist?

Yes

No

Well Condition

Is the concrete pad in good condition?

Yes No

Is the well surface casing in good condition?

Yes No

Is the surface casing vertical?

Yes No

Is there an internal well seal?

Yes No

Has there been physical damage to the well?

Yes No

Does sounding depth match completed depth?

Yes No

Is measuring point marked?

Yes No

Is the well clearly labeled?

Yes No

Flush mount - is it secure from runoff?

Yes No

Overall well condition (circle one)

Good

Fair

Poor

Other comments:

Recommendations

Well needs to be redeveloped

Yes No

Well needs to be re-surveyed

Yes No

Well needs to be repaired

Yes No

Well needs to be replaced

Yes No

Well needs to be properly abandoned

Yes No

No action necessary

Yes No

Comments

Signatures

Inspected by: A. Rappoli _____

Date Inspected: 6/14/18 _____

Reviewed by: Ronald L. Traver _____

(Print) _____

(Sign) _____

^a Mult-gas readings are considered not applicable for Picatinny wells.

EPA Region 2 Superfund Well Assessment Checklist

Owner Well ID: R-234W-002

Facility Information

Site Name:	Picatinny Arsenal	Area: Post Farm	Site:
Site Address:	North East Office Garrison Bldg 319, Picatinny, NJ 07806		
Site County:	Morris		
Site State:	New Jersey		
EPA Site ID Number:	NJ3210020704		
Site Owner:	US Department of Army Picatinny Arsenal		
EPA Project Manager:	Mr. William Roach, USEPA Region II		

Well Location Information

State Well Permit No.: _____
Well Tag ID and Condition: _____
Well Installation Date: _____

Ground Surface Elevation	From Log	From GPS ₁	
	—	N/A	
Latitude	—	N/A	
	—	N/A	
Longitude	—	N/A	
	—	N/A	
Northing (State Plane)	—	N/A	
	—	N/A	
Easting (State Plane)	—	N/A	
	—	N/A	

Cross Streets (if applicable): _____
GPS Instrument used: , N/A
Datum: N/A
Accuracy / Precision: N/A

Well Construction Details

Type of well (circle one)	Flush Mount	Stick up	Multilevel Well ₂
Well lock / Security type:	locked		
Elevation (top of inner casing):	—		
Surface protective casing material:	steel		
Surface casing diameter:	6"		
Well diameter and Casing material:	4" PVC		
Well depth (as installed):	—		
Well depth (as measured):	17.12		
Well Stick Up Height (as measured):	2.40		
Screen interval:	—		
Open hole interval:	—		
Depth to water:	DRY		
Date:	6/14/18	Time:	0935

¹ Picatinny wells will not be resurveyed by GPS unless existing Northing & Easting coordinates from prior survey efforts are not available or other conditions warrant resurveying.

² If multilevel well please see attached worksheet.

N/A = Not Applicable

--- = Not Available

Well Headspec ReadingsPID/FID Reading taken inside top of casing (if applicable): N/A ppmMulti-gas/CGI meter Readings taken (if applicable):^a

LEL:	<u>N/A</u>	% LEL
O ₂ :	<u>N/A</u>	40% Vol.
CO:	<u>N/A</u>	ppm
H ₂ S:	<u>N/A</u>	ppm

Do readings indicate if unsafe conditions exist?

Yes

(No)

Well Condition

Is the concrete pad in good condition?	<input checked="" type="radio"/>	Yes	No
Is the well surface casing in good condition?	<input checked="" type="radio"/>	Yes	No
Is the surface casing vertical?	<input checked="" type="radio"/>	Yes	No
Is there an internal well seal?	<input checked="" type="radio"/>	Yes	No
Has there been physical damage to the well?	Yes	<input type="radio"/>	(No)
Does sounding depth match completed depth?	Yes	<input type="radio"/>	(No)
Is measuring point marked?	<input checked="" type="radio"/>	Yes	No
Is the well clearly labeled?	<input checked="" type="radio"/>	Yes	No
Flush mount - is it secure from runoff?	<input checked="" type="radio"/>	Yes	No

Overall well condition (circle one)

Good

Fair

Poor

Other comments:

Recommendations

Well needs to be redeveloped	Yes	<input type="radio"/>
Well needs to be re-surveyed	Yes	<input type="radio"/>
Well needs to be repaired	Yes	<input type="radio"/>
Well needs to be replaced	Yes	<input type="radio"/>
Well needs to be properly abandoned	Yes	<input type="radio"/>
No action necessary	<input checked="" type="radio"/>	No

Comments

SignaturesInspected by: A. RappoliDate Inspected: 6/14/18

Reviewed by: Ronald L. Traver

R.L.Traver

(Print)

(Sign)

^a Mult-gas readings are considered not applicable for Picatinny wells.

EPA Region 2 Superfund Well Assessment Checklist

Owner Well ID: C-23MW-1B

Facility Information

Site Name:	Picatinny Arsenal	Area: Post Farm	Site:
Site Address:	North East Office Garrison Bldg 319, Picatinny, NJ 07806		
Site County:	Morris		
Site State:	New Jersey		
EPA Site ID Number:	NJ3210020704		
Site Owner:	US Department of Army Picatinny Arsenal		
EPA Project Manager:	Mr. William Roach, USEPA Region II		

Well Location Information

State Well Permit No: 25-44332

Well Tag ID and Condition: --

Well Installation Date: 3/11/1994

Ground Surface Elevation	From Log	From GPS	1
	852.14	N/A	
Latitude	N/A	N/A	2
	N/A	N/A	
Northing (State Plane)	759918.90736	N/A	3
	472105.0446	N/A	

Cross Streets (if applicable): N/A

GPS Instrument used: 1 N/A

Datum: N/A

Accuracy / Precision: N/A

Well Construction Details

Type of well (circle one) Flush Mount Stick up Multilevel Well 2

Well lock / Security type: Locked

Elevation (top of inner casing): --

Surface protective casing material: Steel

Surface casing diameter: 6"

Well diameter and Casing material: 4" PVC

Well depth (as installed): 40.13'

Well depth (as measured): 40.35

Well Stick Up Height (as measured): 1.3'

Screen interval: 10'

Open hole interval: N/A

Depth to water: 10.48

Date: 6/14/18 Time: 0830

¹ Picatinny wells will not be resurveyed by GPS unless existing Northing & Easting coordinates from prior survey efforts are not available or other conditions warrant resurveying.

² If multilevel well please see attached worksheet.

N/A = Not Applicable

-- = Not Available

Well Headspec Readings

PID/FID Reading taken inside top of casing (if applicable): N/A ppm

Multi-gas/CGI meter Readings taken (if applicable): ³

LEL:	N/A	% LEL
O ₂ :	N/A	40% Vol.
CO:	N/A	ppm
H ₂ S:	N/A	ppm

Do readings indicate if unsafe conditions exist?

Yes

No

Well Condition

Is the concrete pad in good condition?

Yes No

Is the well surface casing in good condition?

Yes No

Is the surface casing vertical?

Yes No

Is there an internal well seal?

Yes No

Has there been physical damage to the well?

Yes No

Does sounding depth match completed depth?

Yes No

Is measuring point marked?

Yes No

Is the well clearly labeled?

Yes No

Flush mount - is it secure from runoff?

Yes No

Overall well condition (circle one)

Good

Fair

Poor

Other comments:

Recommendations

Well needs to be redeveloped

Yes No

Well needs to be re-surveyed

Yes No

Well needs to be repaired

Yes No

Well needs to be replaced

Yes No

Well needs to be properly abandoned

Yes No

No action necessary

Yes No

Comments

Signatures

Inspected by: A. Ropponi (Print)
Date Inspected: 6/14/18 (Sign)
Reviewed by: Ronald L. Traver (Print)
R.L. Traver (Sign)

³ Mult-gas readings are considered not applicable for Picatinny wells.

N/A = Not Applicable

--- = Not Available

EPA Region 2 Superfund Well Assessment Checklist

Owner Well ID: C-23MW-04

Facility Information

Site Name:	Picatinny Arsenal	Area: Post Farm	Site:
Site Address:	North East Office Garrison Bldg 319, Picatinny, NJ 07806		
Site County:	Morris		
Site State:	New Jersey		
EPA Site ID Number:	NJ3210020704		
Site Owner:	US Department of Army Picatinny Arsenal		
EPA Project Manager:	Mr. William Roach, USEPA Region II		

Well Location Information

State Well Permit No: 22-35857

Well Tag ID and Condition:

Well Installation Date: 1/3/1997

	From Log	From GPS ₁
Ground Surface Elevation	836.0	N/A
Latitude	N/A	N/A
Longitude	N/A	N/A
Northing (State Plane)	759681.16752	N/A
Easting (State Plane)	471081.72313	N/A

Cross Streets (if applicable): N/A

GPS Instrument used: N/A

Datum: N/A

Accuracy / Precision: N/A

Well Construction Details

Type of well (circle one)	Flush Mount	Stick up	Multilevel Well₂
Well lock / Security type:	locked		
Elevation (top of inner casing):	1.95'		
Surface protective casing material:	Steel		
Surface casing diameter:	6"		
Well diameter and Casing material:	4" PVC		
Well depth (as installed):	54.0'		
Well depth (as measured):	54.56		
Well Stick Up Height (as measured):	2.35'		
Screen interval:	10'		
Open hole interval:	N/A		
Depth to water:	19.54		

Date: 6/14/18 Time: 0855

¹ Picatinny wells will not be resurveyed by GPS unless existing Northing & Easting coordinates from prior survey efforts are not available or other conditions warrant resurveying.

² If multilevel well please see attached worksheet.

N/A = Not Applicable

--- = Not Available

Well Headspec Readings

PID/FID Reading taken inside top of casing (if applicable): N/A ppm

Multi-gas/CGI meter Readings taken (if applicable): ³

LEL:	N/A	% LEL
O ₂ :	N/A	40% Vol.
CO:	N/A	ppm
H ₂ S:	N/A	ppm

Do readings indicate if unsafe conditions exist?

Yes

No

Well Condition

Is the concrete pad in good condition?

Yes

No

Is the well surface casing in good condition?

Yes

No

Is the surface casing vertical?

Yes

No

Is there an internal well seal?

Yes

No

Has there been physical damage to the well?

Yes

No

Does sounding depth match completed depth?

Yes

No

Is measuring point marked?

Yes

No

Is the well clearly labeled?

Yes

No

Flush mount - is it secure from runoff?

Yes

No

Overall well condition (circle one)

Good

Fair

Poor

Other comments:

Recommendations

Well needs to be redeveloped

Yes

No

Well needs to be re-surveyed

Yes

No

Well needs to be repaired

Yes

No

Well needs to be replaced

Yes

No

Well needs to be properly abandoned

Yes

No

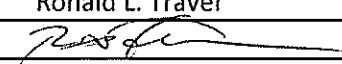
No action necessary

Yes

No

Comments

Signatures

Inspected by: A. Rappoli
Date Inspected: 6/14/18
Reviewed by: Ronald L. Traver


(Print)

(Sign)

³ Mult-gas readings are considered not applicable for Picatinny wells.

N/A = Not Applicable

--- = Not Available

EPA Region 2 Superfund Well Assessment Checklist

Owner Well ID: C-23MW-4B

Facility Information

Site Name:	Picatinny Arsenal	Area: Post Farm	Site:
Site Address:	North East Office Garrison Bldg 319, Picatinny, NJ 07806		
Site County:	Morris		
Site State:	New Jersey		
EPA Site ID Number:	NJ3210020704		
Site Owner:	US Department of Army Picatinny Arsenals		
EPA Project Manager:	Mr. William Roach, USEPA Region II		

Well Location Information

State Well Permit No: 25-44330

Well Tag ID and Condition:

Well Installation Date: 3/8/1994

	From Log	From GPS ₁
Ground Surface Elevation	837.85	N/A
Latitude	N/A	N/A
Longitude	N/A	N/A
Northing (State Plane)	759371.56931	N/A
Easting (State Plane)	471704.97534	N/A

Cross Streets (if applicable): N/A

GPS Instrument used: N/A

Datum: N/A

Accuracy / Precision: N/A

Well Construction Details

Type of well (circle one)	Flush Mount	Stick up	Multilevel Well₂
Well lock / Security type:	locked		
Elevation (top of inner casing):	1.75'		
Surface protective casing material:	Steel		
Surface casing diameter:	6"		
Well diameter and Casing material:	4" PVC		
Well depth (as installed):	49.80'		
Well depth (as measured):	50.25		
Well Stick Up Height (as measured):	2.0'		
Screen interval:	10'		
Open hole interval:	N/A		
Depth to water:	30.35		

Date: 10/14/18 Time: 0905

¹ Picatinny wells will not be resurveyed by GPS unless existing Northing & Easting coordinates from prior survey efforts are not available or other conditions warrant resurveying.

² If multilevel well please see attached worksheet.

N/A = Not Applicable

--- = Not Available

Well Headspec Readings

PID/FID Reading taken inside top of casing (if applicable): N/A ppm
Multi-gas/CGI meter Readings taken (if applicable):
LEL: N/A % LEL
O₂: N/A 40% Vol.
CO: N/A ppm
H₂S: N/A ppm

Do readings indicate if unsafe conditions exist?

Yes

No

Well Condition

Is the concrete pad in good condition? Yes No
Is the well surface casing in good condition? Yes No
Is the surface casing vertical? Yes No
Is there an internal well seal? Yes No
Has there been physical damage to the well? Yes No
Does sounding depth match completed depth? Yes No
Is measuring point marked? Yes No
Is the well clearly labeled? Yes No
Flush mount - is it secure from runoff? Yes No

Overall well condition (circle one)

Good

Fair

Poor

Other comments:

Recommendations

Well needs to be redeveloped Yes No
Well needs to be re-surveyed Yes No
Well needs to be repaired Yes No
Well needs to be replaced Yes No
Well needs to be properly abandoned Yes No
No action necessary Yes No

Comments

Signatures

Inspected by: A. Ruppoli
Date Inspected: 6/14/18
Reviewed by: Ronald L. Traver

(Print) _____
(Sign) _____

³ Mult-gas readings are considered not applicable for Picatinny wells.

N/A = Not Applicable

--- = Not Available

EPA Region 2 Superfund Well Assessment Checklist

Owner Well ID: C-23MW-5B

Facility Information

Site Name:	Picatinny Arsenal	Area: Post Farm	Site:
Site Address:	North East Office Garrison Bldg 319, Picatinny, NJ 07806		
Site County:	Morris		
Site State:	New Jersey		
EPA Site ID Number:	NJ3210020704		
Site Owner:	US Department of Army Picatinny Arsenal		
EPA Project Manager:	Mr. William Roach, USEPA Region II		

Well Location Information

State Well Permit No: 25-58701

Well Tag ID and Condition:

Well Installation Date: 10/22/2001

	From Log	From GPS ¹
<i>Ground Surface Elevation</i>	796.99	N/A
<i>Latitude</i>	N/A	N/A
<i>Longitude</i>	N/A	N/A
<i>Northing (State Plane)</i>	766766.08409	N/A
<i>Easting (State Plane)</i>	476551.87369	N/A

Cross Streets (if applicable): N/A

GPS Instrument used: N/A

Datum: N/A

Accuracy / Precision: N/A

Well Construction Details

Type of well (circle one)	Flush Mount	Stick up
----------------------------------	--------------------	-----------------

Well lock / Security type:	<i>locked</i>	Multilevel Well ²
-----------------------------------	---------------	-------------------------------------

Elevation (top of inner casing):	2.1'	
---	------	--

Surface protective casing material:	Steel	
--	-------	--

Surface casing diameter:	4"	
---------------------------------	----	--

Well diameter and Casing material:	2" PVC	
---	--------	--

Well depth (as installed):	37.2'	
-----------------------------------	-------	--

Well depth (as measured):	30 . 30	
----------------------------------	---------	--

Well Stick Up Height (as measured):	2.25'	
--	-------	--

Screen interval:	10'	
-------------------------	-----	--

Open hole interval:	N/A	
----------------------------	-----	--

Depth to water:	18.82	
------------------------	-------	--

Date: 6/14/18	Time: 0850
----------------------	-------------------

¹ Picatinny wells will not be resurveyed by GPS unless existing Northing & Easting coordinates from prior survey efforts are not available or other conditions warrant resurveying.

² If multilevel well please see attached worksheet.

N/A = Not Applicable

--- = Not Available

Well Headspec Readings

PID/FID Reading taken inside top of casing (if applicable): N/A ppm

Multi-gas/CGI meter Readings taken (if applicable): ^a

LEL:	N/A	% LEL
O ₂ :	N/A	40% Vol.
CO:	N/A	ppm
H ₂ S:	N/A	ppm

Do readings indicate if unsafe conditions exist?

Yes

(No)

Well Condition

Is the concrete pad in good condition?

Yes

No

Is the well surface casing in good condition?

Yes

No

Is the surface casing vertical?

Yes

No

Is there an internal well seal?

Yes

No

Has there been physical damage to the well?

Yes

(No)

Does sounding depth match completed depth?

Yes

(No)

Is measuring point marked?

Yes

No

Is the well clearly labeled?

Yes

No

Flush mount - is it secure from runoff?

Yes

No

Overall well condition (circle one)

Good

Fair

Poor

Other comments:

Recommendations

Well needs to be redeveloped

Yes

(No)

Well needs to be re-surveyed

Yes

(No)

Well needs to be repaired

Yes

(No)

Well needs to be replaced

Yes

(No)

Well needs to be properly abandoned

Yes

(No)

No action necessary

Yes

No

Comments

Signatures

Inspected by: A. Rappoli

Date Inspected: 1/14/18

Reviewed by: Ronald L. Traver

(Print)

(Sign)

^a Mult-gas readings are considered not applicable for Picatinny wells.

N/A = Not Applicable

--- = Not Available

EPA Region 2 Superfund Well Assessment Checklist

Owner Well ID: C-DM23-1

Facility Information

Site Name:	Picatinny Arsenal	Area: Post Farm	Site:
Site Address:	North East Office Garrison Bldg 319, Picatinny, NJ 07806		
Site County:	Morris		
Site State:	New Jersey		
EPA Site ID Number:	NJ3210020704		
Site Owner:	US Department of Army Picatinny Arsenal		
EPA Project Manager:	Mr. William Roach, USEPA Region II		

Well Location Information

State Well Permit No: 25-30849

Well Tag ID and Condition:

Well Installation Date: 2/22/1988

	From Log	From GPS ₁
Ground Surface Elevation	853.15	N/A
Latitude	N/A	N/A
Longitude	N/A	N/A
Northing (State Plane)	759982.36838	N/A
Easting (State Plane)	472033.79993	N/A

Cross Streets (if applicable): N/A

GPS Instrument used: N/A

Datum: N/A

Accuracy / Precision: N/A

Well Construction Details

Type of well (circle one)	Flush Mount	Stick up	Multilevel Well ₂
Well lock / Security type:	locked		
Elevation (top of inner casing):	1.95'		
Surface protective casing material:	Steel		
Surface casing diameter:	6"		
Well diameter and Casing material:	4" PVC		
Well depth (as installed):	39.0'		
Well depth (as measured):	39.96		
Well Stick Up Height (as measured):	2.23'		
Screen interval:	10'		
Open hole interval:	N/A		
Depth to water:	17.88		
Date:	6/14/18	Time:	0835

¹ Picatinny wells will not be resurveyed by GPS unless existing Northing & Easting coordinates from prior survey efforts are not available or other conditions warrant resurveying.

² If multilevel well please see attached worksheet.

N/A = Not Applicable

--- = Not Available

Well Headspec Readings

PID/FID Reading taken inside top of casing (if applicable): N/A ppm

Multi-gas/CGI meter Readings taken (if applicable): ³

LEL: N/A % LEL
O₂: N/A 40% Vol.
CO: N/A ppm
H₂S: N/A ppm

Do readings indicate if unsafe conditions exist?

Yes

No

Well Condition

Is the concrete pad in good condition?

Yes No

Is the well surface casing in good condition?

Yes No

Is the surface casing vertical?

Yes No

Is there an internal well seal?

Yes No

Has there been physical damage to the well?

Yes No

Does sounding depth match completed depth?

Yes No

Is measuring point marked?

Yes No

Is the well clearly labeled?

Yes No

Flush mount - is it secure from runoff?

Yes No

Overall well condition (circle one)

Good

Fair

Poor

Other comments:

Recommendations

Well needs to be redeveloped

Yes No

Well needs to be re-surveyed

Yes No

Well needs to be repaired

Yes No

Well needs to be replaced

Yes No

Well needs to be properly abandoned

Yes No

No action necessary

Yes No

Comments

Signatures

Inspected by: A. Ropponi

Date Inspected: 6/14/18

Reviewed by: Ronald L. Traver

(Print)

(Sign)



³ Mult-gas readings are considered not applicable for Picatinny wells.

N/A = Not Applicable

--- = Not Available

EPA Region 2 Superfund Well Assessment Checklist

Owner Well ID: C-DM23-2

Facility Information

Site Name:	Picatinny Arsenal	Area: Post Farm	Site:
Site Address:	North East Office Garrison Bldg 319, Picatinny, NJ 07806		
Site County:	Morris		
Site State:	New Jersey		
EPA Site ID Number:	NJ3210020704		
Site Owner:	US Department of Army Picatinny Arsenal		
EPA Project Manager:	Mr. William Roach, USEPA Region II		

Well Location Information

State Well Permit No: 25-30848

Well Tag ID and Condition: --

Well Installation Date: 2/11/1988

	From Log	From GPS ¹
Ground Surface Elevation	839.26	N/A
Latitude	N/A	N/A
Longitude	N/A	N/A
Northing (State Plane)	759458.03883	N/A
Easting (State Plane)	471831.1	N/A

Cross Streets (if applicable): N/A

GPS Instrument used: N/A

Datum: N/A

Accuracy / Precision: N/A

Well Construction Details

Type of well (circle one) **Flush Mount** **Stick up** **Multilevel Well ²**

Well lock / Security type: locked

Elevation (top of inner casing): --

Surface protective casing material: Steel

Surface casing diameter: 6"

Well diameter and Casing material: 4" PVC

Well depth (as installed): 44.75

Well depth (as measured): 44.83

Well Stick Up Height (as measured): 2.25'

Screen interval: 10'

Open hole interval: N/A

Depth to water: 35.18

Date: 6/14/18 Time: 0910

¹ Picatinny wells will not be resurveyed by GPS unless existing Northing & Easting coordinates from prior survey efforts are not available or other conditions warrant resurveying.

² If multilevel well please see attached worksheet.

N/A = Not Applicable

-- = Not Available

Well Headspec Readings

PID/FID Reading taken inside top of casing (if applicable): N/A ppm

Multi-gas/CGI meter Readings taken (if applicable): ^a

LEL:	N/A	% LEL
O ₂ :	N/A	40% Vol.
CO:	N/A	ppm
H ₂ S:	N/A	ppm

Do readings indicate if unsafe conditions exist?

Yes

No

Well Condition

Is the concrete pad in good condition?

Yes No

Is the well surface casing in good condition?

Yes No

Is the surface casing vertical?

Yes No

Is there an internal well seal?

Yes No

Has there been physical damage to the well?

Yes No

Does sounding depth match completed depth?

Yes No

Is measuring point marked?

Yes No

Is the well clearly labeled?

Yes No

Flush mount - is it secure from runoff?

Yes No

Overall well condition (circle one)

Good

Fair

Poor

Other comments:

Recommendations

Well needs to be redeveloped

Yes No

Well needs to be re-surveyed

Yes No

Well needs to be repaired

Yes No

Well needs to be replaced

Yes No

Well needs to be properly abandoned

Yes No

No action necessary

Yes No

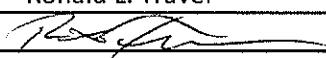
Comments

Signatures

Inspected by: A. Ruppel

Date Inspected: 6/14/15

Reviewed by: Ronald L. Traver (Print)



(Sign)

^a Mult-gas readings are considered not applicable for Picatinny wells.

N/A = Not Applicable

--- = Not Available

EPA Region 2 Superfund Well Assessment Checklist

Owner Well ID: C-DM23-3

Facility Information

Site Name:	Picatinny Arsenal	Area: Post Farm	Site:
Site Address:	North East Office Garrison Bldg 319, Picatinny, NJ 07806		
Site County:	Morris		
Site State:	New Jersey		
EPA Site ID Number:	NJ3210020704		
Site Owner:	US Department of Army Picatinny Arsenal		
EPA Project Manager:	Mr. William Roach, USEPA Region II		

Well Location Information

State Well Permit No: 25-30850

Well Tag ID and Condition:

Well Installation Date: 2/24/1988

	From Log	From GPS₁
Ground Surface Elevation	880.0	N/A
Latitude	N/A	N/A
Longitude	N/A	N/A
Northing (State Plane)	760004.80	N/A
Easting (State Plane)	472604.70	N/A

Cross Streets (if applicable): N/A

GPS Instrument used: N/A

Datum: N/A

Accuracy / Precision: N/A

Well Construction Details

Type of well (circle one)	Flush Mount	Stick up	Multilevel Well₂
Well lock / Security type:	Pad Lock		
Elevation (top of inner casing):	1.85'		
Surface protective casing material:	Steel		
Surface casing diameter:	6"		
Well diameter and Casing material:	4" PVC		
Well depth (as installed):	45.0'		
Well depth (as measured):	45.27		
Well Stick Up Height (as measured):	1.85'		
Screen interval:	10'		
Open hole interval:	N/A		
Depth to water:	35.66		
	Date: 6/14/18	Time: 0840	

¹ Picatinny wells will not be resurveyed by GPS unless existing Northing & Easting coordinates from prior survey efforts are not available or other conditions warrant resurveying.

² If multilevel well please see attached worksheet.

N/A = Not Applicable

--- = Not Available

Well Headspec Readings

PID/FID Reading taken inside top of casing (if applicable): N/A ppm

Multi-gas/CGI meter Readings taken (if applicable): ^a

LEL: N/A % LEL

O₂: N/A 40% Vol.

CO: N/A ppm

H₂S: N/A ppm

Do readings indicate if unsafe conditions exist?

Yes

No

Well Condition

Is the concrete pad in good condition?

Yes

No

Is the well surface casing in good condition?

Yes

No

Is the surface casing vertical?

Yes

No

Is there an internal well seal?

Yes

No

Has there been physical damage to the well?

Yes

No

Does sounding depth match completed depth?

Yes

No

Is measuring point marked?

Yes

No

Is the well clearly labeled?

Yes

No

Flush mount - is it secure from runoff?

Yes

No

Overall well condition (circle one)

Good

Fair

Poor

Other comments:

Recommendations

Well needs to be redeveloped

Yes

No

Well needs to be re-surveyed

Yes

No

Well needs to be repaired

Yes

No

Well needs to be replaced

Yes

No

Well needs to be properly abandoned

Yes

No

No action necessary

Yes

No

Comments

Signatures

Inspected by: A. Rappo
Date Inspected: 6/14/18
Reviewed by: Ronald L. Traver (Print)
R.L.T. (Sign)

^a Mult-gas readings are considered not applicable for Picatinny wells.

N/A = Not Applicable

--- = Not Available

EPA Region 2 Superfund Well Assessment Checklist

Owner Well ID: C-MW-14

Facility Information

Site Name:	Picatinny Arsenal	Area: Post Farm	Site:
Site Address:	North East Office Garrison Bldg. 319, Picatinny, NJ 07806		
Site County:	Morris		
Site State:	New Jersey		
EPA Site ID Number:	NJ3210020704		
Site Owner:	US Department of Army Picatinny Arsenal		
EPA Project Manager:	Mr. William Roach, USEPA Region II		

Well Location Information

State Well Permit No: 25-30850

Well Tag ID and Condition: --

Well Installation Date: --

	From Log	From GPS ₁
Ground Surface Elevation	--	N/A
Latitude	N/A	N/A
Longitude	N/A	N/A
Northing (State Plane)	--	N/A
Easting (State Plane)	--	N/A

Cross Streets (if applicable):

GPS Instrument used: 1 N/A

Datum: N/A

Accuracy / Precision: N/A

Well Construction Details

Type of well (circle one)	Flush Mount	Stick-up	Multilevel Well ₂
Well lock / Security type:		locked	
Elevation (top of inner casing):		--	
Surface protective casing material:		steel	
Surface casing diameter (in):		6	
Well diameter (in) and Casing material:		4 pvc	
Well depth (as installed in ft):		--	
Well depth (as measured in ft):		31.45	
Well Stick Up Height (as measured in ft):		--	
Screen interval (ft):		--	
Open hole interval (ft):		--	
Depth to water (ftbtoc):		30.80	

Date: 6/14/18 Time: 0950

¹ Picatinny wells will not be resurveyed by GPS unless existing Northing & Easting coordinates from prior survey efforts are not available or other conditions warrant resurveying.

² If multilevel well please see attached worksheet.

N/A = Not Applicable

-- = Not Available

Well Headspace Readings

PID/FID Reading taken inside top of casing (if applicable): _____ N/A ppm

Multi-gas/CGI meter Readings taken (if applicable): ³ _____

LEL:	N/A	% LEL
O ₂ :	N/A	40% Vol.
CO:	N/A	ppm
H ₂ S:	N/A	ppm

Do readings indicate if unsafe conditions exist?

Yes

No

Well Condition

Is the concrete pad in good condition?

Yes No

Is the well surface casing in good condition?

No

Is the surface casing vertical?

No

Is there an internal well seal?

No

Has there been physical damage to the well?

Yes No

Does sounding depth match completed depth?

No

Is measuring point marked?

No

Is the well clearly labeled?

No

Flush mount - is it secure from runoff?

No

Overall well condition (circle one)

Good

Fair

Poor

Other comments:

Recommendations

Well needs to be redeveloped

Yes

No

Well needs to be re-surveyed

Yes

No

Well needs to be repaired

Yes

No

Well needs to be replaced

Yes

No

Well needs to be properly abandoned

Yes

No

No action necessary

Yes

No

Comments

Signatures

Inspected by: A. Rippoli
Date Inspected: 6/14/18
Reviewed by: Ronald L. Traver
Ron (Print)
(Sign)

³ Multi-gas readings are considered not applicable for Picatinny wells.

N/A = Not Applicable

--- = Not Available



LOW FLOW SAMPLING PURGE FORM

SITE: Picatinny Arsenal - Area F

Date: 4/18/08WEATHER: 30° S cloudy

CONSULTING FIRM: Sovereign Consulting Inc.

SOV. PROJECT #: RB 577

SAMPLE(S): DT / AR

MONITOR WELL #: C-DM 23-03

WELL DEPTH: 45.25 ft

(pH units)

WELL PERMIT #: _____

WELL DIAMETER: 4 Inches

(mV)

SCREENED/OPEN INTERVAL:

ft

35-45

ft

PFD/PID READINGS (ppm):

66 Sol 3 WO

ft

HORIBA U-52 Water Quality Meter SN: 66 Sol 3 WO

ft

PUMP INTAKE DEPTH: 40 ft below TOCDEPTH TO WATER BEFORE PUMP INSTALLATION: 34.22 ft below TOC

Harriman SS

*INDICATOR PARAMETERS HAVE STABILIZED WHEN 3 CONSECUTIVE READINGS ARE WITHIN: ± 0.1 for pH; $\pm 3\%$ for Specific Conductivity and Temperature; ± 10 mV for Redox Potential; and $\pm 10\%$ for Dissolved Oxygen and Turbidity; 0.30° Max. Drawdown; 100-500 ml./flow rate

*Analysis Methods: SM 2510 B - Specific Conductivity; EPA 180.1 - Turbidity; SM4500-H B - pH; SM2550 B - Temperature

COMMENTS:

DUP - PF + MS/MSD

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Appendix B

Laboratory and Data Validation Reports (Provided on CD)

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The results set forth herein are provided by SGS North America Inc.

e-Hardcopy 2.0
Automated Report

Technical Report for

EA Engineering

SCNJR: Picatinny Arsenal, Route 15, Picatinny Arsenal, NJ

RENJRB75668

SGS Job Number: FA53627

Sampling Date: 04/18/18



Report to:

**EA Engineering
6712 Brooklawn Pkwy Suite 104
Syracuse, NY 13211
asmith@eaest.com; hwilliams@eaest.com;
tlamond@eaest.com; fdesantis@eaest.com
ATTN: Amanda Smith**

Total number of pages in report: 167



Test results contained within this data package meet the requirements
of the National Environmental Laboratory Accreditation Program
and/or state specific certification programs as applicable.



**Caitlin Brice, M.S.
General Manager**

Client Service contact: Andrea Colby 407-425-6700

**Certifications: FL(E83510), LA(03051), KS(E-10327), IL(200063), NC(573), NJ(FL002), NY(12022), SC(96038001)
DoD ELAP(ANAB L2229), AZ(AZ0806), CA(2937), TX(T104704404), PA(68-03573), VA(460177),
AK, AR, IA, KY, MA, MS, ND, NH, NV, OK, OR, UT, WA, WV**

This report shall not be reproduced, except in its entirety, without the written approval of SGS.

Test results relate only to samples analyzed.

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Sample Summary

EA Engineering

Job No: FA53627SCNJR: Picatinny Arsenal, Route 15, Picatinny Arsenal, NJ
Project No: RENJRB75668

Sample Number	Collected Date	Time By	Matrix Received	Code Type	Client Sample ID	
FA53627-1	04/18/18	10:10 DT	04/21/18	AQ	Ground Water	C-DM23-03
FA53627-1D	04/18/18	10:10 DT	04/21/18	AQ	Water Dup/MSD	C-DM23-03
FA53627-1S	04/18/18	10:10 DT	04/21/18	AQ	Water Matrix Spike	C-DM23-03
FA53627-2	04/18/18	00:00 DT	04/21/18	AQ	Ground Water	DUP-PF
FA53627-3	04/18/18	15:20 DT	04/21/18	AQ	Field Blank Water	FB-PF

SAMPLE DELIVERY GROUP CASE NARRATIVE

Client: EA Engineering

Job No: FA53627

Site: SCNR: Picatinny Arsenal, Route 15, Picatinny Arsenal, NJ

Report Date: 5/7/2018 5:47:38 PM

2 Sample(s) and 1 Field Blank(s) were collected on 04/18/2018 and were received at SGS North America Inc - Orlando on 04/21/2018 properly preserved, at 3.8 Deg. C and intact. These Samples received an SGS Orlando job number of FA53627. A listing of the Laboratory Sample ID, Client Sample ID and dates of collection are presented in the Results Summary Section.

Except as noted below, all method specified calibrations and quality control performance criteria were met for this job. For more information, please refer to QC summary pages.

Please refer to the QC Evaluation: DOD QSM5 Limits Summary Section for recoveries or RPDs exceeding control limits.

Metals Analysis By Method SW846 6020A

Matrix: AQ

Batch ID: MP33699

All samples were digested within the recommended method holding time.

All samples were analyzed within the recommended method holding time.

All method blanks for this batch meet method specific criteria.

Sample(s) FA53625-18FSDL, FA53627-1DUP, FA53627-1MS, FA53627-1MSD, FA53627-1SDL were used as the QC samples for metals.

SGS Orlando certifies that this report meets the project requirements for analytical data produced for the samples as received at SGS Orlando and as stated on the COC. SGS Orlando certifies that the data meets the Data Quality Objectives for precision, accuracy and completeness as specified in the SGS Orlando Quality Manual except as noted above. This report is to be used in its entirety. SGS Orlando is not responsible for any assumptions of data quality if partial data packages are used.

Narrative prepared by:

Kim Benham, Client Services (signature on file)

Summary of Hits

Job Number: FA53627
Account: EA Engineering
Project: SCNJR: Picatinny Arsenal, Route 15, Picatinny Arsenal, NJ
Collected: 04/18/18

Lab Sample ID	Client Sample ID	Result/ Analyte	Qual	LOQ	LOD	Units	Method
FA53627-1	C-DM23-03						
Cadmium		5.3		2.0	1.0	ug/l	SW846 6020A
FA53627-2	DUP-PF						
Cadmium		5.3		2.0	1.0	ug/l	SW846 6020A
FA53627-3	FB-PF						

No hits reported in this sample.



Orlando, FL

Section 4

4

Sample Results

Report of Analysis

Report of Analysis

Page 1 of 1

Client Sample ID:	C-DM23-03	Date Sampled:	04/18/18
Lab Sample ID:	FA53627-1	Date Received:	04/21/18
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Project:	SCNJR: Picatinny Arsenal, Route 15, Picatinny Arsenal, NJ		

Total Metals Analysis

Analyte	Result	LOQ	LOD	DL	Units	DF	Prep	Analyzed By	Method	Prep Method
Cadmium	5.3	2.0	1.0	0.20	ug/l	2	05/05/18 05/07/18 DM	SW846 6020A ¹	SW846 3010A ²	

(1) Instrument QC Batch: MA14875

(2) Prep QC Batch: MP33699

LOQ = Limit of Quantitation

DL = Detection Limit

U = Indicates a result < LOD

LOD = Limit of Detection

B = Analyte found in associated blank

J = Indicates a result > = DL (MDL) but < LOQ

4.1

4

Report of Analysis

Page 1 of 1

Client Sample ID:	DUP-PF	Date Sampled:	04/18/18
Lab Sample ID:	FA53627-2	Date Received:	04/21/18
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Project:	SCNJR: Picatinny Arsenal, Route 15, Picatinny Arsenal, NJ		

Total Metals Analysis

Analyte	Result	LOQ	LOD	DL	Units	DF	Prep	Analyzed By	Method	Prep Method
Cadmium	5.3	2.0	1.0	0.20	ug/l	2	05/05/18 05/07/18 DM	SW846 6020A ¹	SW846 3010A ²	

(1) Instrument QC Batch: MA14875

(2) Prep QC Batch: MP33699

4.2
4

LOQ = Limit of Quantitation

DL = Detection Limit

U = Indicates a result < LOD

LOD = Limit of Detection

B = Analyte found in associated blank

J = Indicates a result > = DL (MDL) but < LOQ

Report of Analysis

Page 1 of 1

Client Sample ID:	FB-PF	Date Sampled:	04/18/18
Lab Sample ID:	FA53627-3	Date Received:	04/21/18
Matrix:	AQ - Field Blank Water	Percent Solids:	n/a
Project:	SCNJR: Picatinny Arsenal, Route 15, Picatinny Arsenal, NJ		

Total Metals Analysis

Analyte	Result	LOQ	LOD	DL	Units	DF	Prep	Analyzed By	Method	Prep Method
Cadmium	1.0 U	2.0	1.0	0.20	ug/l	2	05/05/18 05/07/18 DM	SW846 6020A ¹	SW846 3010A ²	

(1) Instrument QC Batch: MA14875

(2) Prep QC Batch: MP33699

4.3
4

LOQ = Limit of Quantitation

DL = Detection Limit

U = Indicates a result < LOD

LOD = Limit of Detection

B = Analyte found in associated blank

J = Indicates a result > = DL (MDL) but < LOQ

Misc. Forms**5****Custody Documents and Other Forms**

Includes the following where applicable:

- Chain of Custody
- QC Evaluation: DOD QSM5 Limits



CHAIN OF CUSTODY

FA53627 PAGE 1 OF 1

495 Technology Center West, Bldg 1, Marlborough, Massachusetts 01752
 TEL: 508-481-6200 FAX: 508-481-7753
www.acutest.com

Client / Reporting Information		Project Information		Requested Analysis (see TEST CODE sheet)		Matrix Codes								
Company Name EA Science & Technology	Project Name: Picatinny Arsenal													
Street Address 8712 Brooklawn Prkwy Suite 104	Street: Rte. 15, Picatinny Arsenal													
City State Zip Syracuse, NY 13211	City State Wharton NJ	Billing Information (If different from Report to)												
Project Contact E-mail Frank DeSantis Jr	Project # RB577	Street Address												
Phone # 315 - 565 - 6554	Fax #	Client Purchase Order #		City	State	Zip								
Sampler(s) Name(s)	Phone #	Project Manager		Attention:										
Accutest Sample #	Field ID / Point of Collection	Collection			Number of preserved Bottles	Explosives by EPA 8330A	Dissolved Gasses by EPA RSK-175	Nitrate/Nitrite by SM4500-NO3	Sulfate by ATM 516-90-Q2	Dissolved Iron by EPA 6020	Total Metals by EPA 6020	Dissolved Metals by EPA 6020	Arsenic by EPA 6020	LAB USE ONLY
		Date	Time	Sampled by										
(1) C - DM23-03	4/18/18	1010 DT GW 1			X	X	X							
(2) C - DM23-03 NS/MSD		1010		1										
(3) DVP-PF		2000		1										
(3) FB-PF		1520		1										
Turnaround Time (Business days)	Approved By (Accutest PM): / Date:			Data Deliverable Information			Comments / Special Instructions							
<input checked="" type="checkbox"/> Std. 10 Business Days				<input type="checkbox"/> Commercial "A" (Level 1)	<input type="checkbox"/> NYASP Category A	SHIP ALL SAMPLES TO ORLANDO, FL LAB.								
<input type="checkbox"/> 5 Day RUSH				<input type="checkbox"/> Commercial "B" (Level 2)	<input type="checkbox"/> NYASP Category B									
<input type="checkbox"/> 3 Day RUSH				<input checked="" type="checkbox"/> FULLT1 (Level 3+4)	<input type="checkbox"/> State Forms									
<input type="checkbox"/> 2 Day RUSH				<input type="checkbox"/> NJ Reduced	<input type="checkbox"/> EDD Format									
<input type="checkbox"/> 1 Day RUSH				<input type="checkbox"/> Commercial "C"	<input type="checkbox"/> Other _____									
other				<input type="checkbox"/> NJ Date of Known Quality Protocol Reporting	collected by: (SCI - Sovereign Consulting)									
Emergency & Rush TIA data available VIA Lablink														
Sample Custody must be documented below each time samples change possession, including courier delivery.														
1 Relinquished by Sampler:	Date Time: 4/19/18 17:20	Received By: 1 hours later	Relinquished By: 2 FedEx with	Date Time: 4/19/18 17:20	Received By: 2									
3 Relinquished by Sampler:	Date Time: 4/20/18 1700	Received By: 3 FedEx	Relinquished By: 4 FedEx	Date Time: 04-31-18	Received By: 4	- corresp 10:45								
5 Relinquished by:	Date Time:	Received By: 5	Custody Sp# 961	Intact <input type="checkbox"/> Not intact <input type="checkbox"/>	Preserved where applicable <input type="checkbox"/>	On Ice <input type="checkbox"/>	Gender <input type="checkbox"/>	2-8°C <input type="checkbox"/>	8-15°C <input type="checkbox"/>	15-25°C <input type="checkbox"/>	25-35°C <input type="checkbox"/>	35-45°C <input type="checkbox"/>	45-55°C <input type="checkbox"/>	

5.1
5

FA53627: Chain of Custody

Page 1 of 2

SGS Sample Receipt Summary

Job Number: FA53627	Client: EA. SCIENCE	Project: PICATINNY
Date / Time Received: 4/21/2018 10:45:00 AM	Delivery Method: FX	Airbill #'s: 1001893373010003281100563393515890
Therm ID: IR 1;		Therm CF: 0.4;
		# of Coolers: 1
Cooler Temps (Raw Measured) °C: Cooler 1: (3.4);		
Cooler Temps (Corrected) °C: Cooler 1: (3.8);		

Cooler Information		Y or N	Sample Information	Y or N	N/A	
1. Custody Seals Present	<input checked="" type="checkbox"/>	<input type="checkbox"/>	1. Sample labels present on bottles	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
2. Custody Seals Intact	<input checked="" type="checkbox"/>	<input type="checkbox"/>	2. Samples preserved properly	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
3. Temp criteria achieved	<input checked="" type="checkbox"/>	<input type="checkbox"/>	3. Sufficient volume/containers recvd for analysis:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
4. Cooler temp verification	IR Gun		4. Condition of sample	Intact		
5. Cooler media	Ice (Bag)		5. Sample recvd within HT	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Trip Blank Information		Y or N	N/A	6. Dates/Times/IDs on COC match Sample Label	<input checked="" type="checkbox"/>	<input type="checkbox"/>
1. Trip Blank present / cooler	<input type="checkbox"/>	<input type="checkbox"/>	7. VOCs have headspace	<input type="checkbox"/>	<input type="checkbox"/>	
2. Trip Blank listed on COC	<input type="checkbox"/>	<input type="checkbox"/>	8. Bottles received for unspecified tests	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
		W or S	N/A	9. Compositing instructions clear	<input type="checkbox"/>	<input type="checkbox"/>
3. Type Of TB Received	<input type="checkbox"/>	<input type="checkbox"/>	10. VOA Soil Kits/Jars received past 48hrs?	<input type="checkbox"/>	<input type="checkbox"/>	
			11. % Solids Jar received?	<input type="checkbox"/>	<input type="checkbox"/>	
			12. Residual Chlorine Present?	<input type="checkbox"/>	<input type="checkbox"/>	

Misc. Information

Number of Enclos: 25-Gram _____ 5-Gram _____
 Test Strip Lot #: pH 0-3 230315
 Residual Chlorine Test Strip Lot #: _____

Number of 5035 Field Kits: _____
 pH 10-12 219813A

Number of Lab Filtered Metals: _____
 Other: (Specify) _____

Comments

SM001
 Rev. Date 05/24/17

Technician: JORGEC

Date: 4/21/2018 10:45:00 A

Reviewer: TL

Date: 4/23/2018

FA53627: Chain of Custody

Page 2 of 2

5.1

5

QC Evaluation: DOD QSM5 Limits

Page 1 of 1

Job Number: FA53627

Account: EA Engineering

Project: SCNJR: Picatinny Arsenal, Route 15, Picatinny Arsenal, NJ

Collected: 04/18/18

QC Sample ID	CAS#	Analyte	Sample Type	Result Type	Result	Units	Limits
MP33699	SW846 6020A						
MP33699-B1	7440-43-9	Cadmium	BSP	REC	103.5	%	87-115
MP33699-S3	7440-43-9	Cadmium	MS	REC	103.9	%	87-115
MP33699-S4	7440-43-9	Cadmium	MSD	REC	100.9	%	87-115
MP33699-S4	7440-43-9	Cadmium	MSD	RPD	2.9	%	20
MP33699-D2	7440-43-9	Cadmium	DUP	RPD	5.5	%	20

* Sample used for QC is not from job FA53627

Metals Analysis**QC Data Summaries**

Includes the following where applicable:

- Instrument Runlogs
- Initial and Continuing Calibration Blanks
- Initial and Continuing Calibration Checks
- High and Low Check Standards
- Interfering Element Check Standards
- Method Blank Summaries
- Matrix Spike and Duplicate Summaries
- Blank Spike and Lab Control Sample Summaries
- Serial Dilution Summaries
- IDL and Linear Range Summaries



SGS Instrument Runlog
Inorganics Analyses

Login Number: FA53627
 Account: EAENYS - EA Engineering
 Project: SCNJR: Picatinny Arsenal, Route 15, Picatinny Arsenal, NJ

File ID: XA050718M1.CSV Date Analyzed: 05/07/18 Methods: SW846 6020A
 Analyst: DM Run ID: MA14875
 Parameters: Cd

Time	Sample Description	Dilution Factor	PS Recov	Comments
10:14	MA14875-STD1	1		STDA
10:18	MA14875-STD2	1		STDB
10:22	MA14875-STD3	1		STDC
10:25	MA14875-STD4	1		STDD
10:29	MA14875-STD5	1		STDE
10:33	MA14875-STD6	1		STDF
10:37	MA14875-STD7	1		STDG
10:44	MA14875-HSTD1	1		
10:48	MA14875-ICV1	1		
10:51	MA14875-ICB1	1		
10:55	MA14875-CRIA1	1		
10:59	MA14875-ICSA1	1		
11:02	MA14875-ICSAB1	1		
11:10	MA14875-CCV1	1		
11:13	MA14875-CCB1	1		
11:17	MP33699-MB1	2		
11:21	MP33699-B1	2		
11:24	FA53625-18F	2		(sample used for QC only; not part of login FA53627)
11:28	MP33699-D1	2		
11:31	MP33699-SD1	10		
11:35	MP33699-S1	2		
11:39	MP33699-S2	2		
11:42	MP33699-PS1	2		
11:46	ZZZZZZ	2		
11:50	ZZZZZZ	2		
11:57	MA14875-CCV2	1		
12:01	MA14875-CCB2	1		
12:04	ZZZZZZ	2		
12:08	ZZZZZZ	2		
12:11	ZZZZZZ	2		
12:15	ZZZZZZ	2		
12:19	ZZZZZZ	2		
12:22	ZZZZZZ	2		

SGS Instrument Runlog
Inorganics Analyses

Login Number: FA53627
Account: EAENYS - EA Engineering
Project: SCNJR: Picatinny Arsenal, Route 15, Picatinny Arsenal, NJ

File ID: XA050718M1.CSV Date Analyzed: 05/07/18 Methods: SW846 6020A
Analyst: DM Run ID: MA14875
Parameters: Cd

Time	Sample Description	Dilution Factor	PS Recov	Comments
12:26	ZZZZZ	2		
12:30	FA53627-1	2		
12:33	MP33699-D2	2		
12:37	MP33699-SD2	10		
12:44	MA14875-CCV3	1		
12:48	MA14875-CCB3	1		
12:51	MP33699-S3	2		
12:55	MP33699-S4	2		
12:59	MP33699-PS2	2		
13:02	FA53627-2	2		
13:06	FA53627-3	2		
-----> Last reportable sample/prep for job FA53627				
13:09	ZZZZZ	2		
13:13	ZZZZZ	2		
13:17	ZZZZZ	2		
13:20	MA14875-CRIA2	1		
13:24	MA14875-ICSA2	1		
13:31	MA14875-CCV4	1		
13:35	MA14875-CCB4	1		
13:39	MA14875-ICSAB2	1		
13:46	MA14875-CCV5	1		
13:49	MA14875-CCB5	1		
-----> Last reportable CCB for job FA53627 Refer to raw data for calibration curve and standards.				

INTERNAL STANDARD SUMMARY

Login Number: FA53627
 Account: EAENYS - EA Engineering
 Project: SCNJR: Picatinny Arsenal, Route 15, Picatinny Arsenal, NJ

File ID: XA050718M1.CSV Date Analyzed: 05/07/18 Methods: SW846 6020A
 Analyst: DM Run ID: MA14875
 Parameters: Cd

Time	Sample Description	Istd#1	Istd#2	Istd#3	Istd#4	Istd#5	Istd#6	Istd#7	Istd#8
10:14	MA14875-STD1	100	100	100	100	100	100	100	100
10:18	MA14875-STD2	97	99.5	99.5	99	99.5	99.8	100.2	100.3
10:22	MA14875-STD3	95.1	98.2	97.9	98	98.2	98.3	98.9	99.1
10:25	MA14875-STD4	93.1	95.1	95	96.1	94.7	97.2	97.4	95
10:29	MA14875-STD5	87.8	93.2	93.5	93.2	92.6	96.7	94.2	90.7
10:33	MA14875-STD6	84.1	92	91.2	91.2	91.5	96	91.7	87.3
10:37	MA14875-HSTD1	81	92.5	90.6	90.4	90.7	94.8	88.2	81.4
10:44	MA14875-ICV1	85.6	92.3	89.8	89.9	89.9	94.4	88.4	81.5
10:48	MA14875-ICB1	84.4	91.5	90.4	90.8	90.7	96.1	91.8	85
10:51	MA14875-CRIA1	87.7	90.9	93.3	93.5	93.9	97.4	97.9	95.3
10:55	MA14875-ICSA1	89	93.9	94.3	94.5	95.6	98.8	99.3	96.2
10:59	MA14875-CCV1	73	92.9	86	83.7	84.1	88.3	75.8	73.4
11:02	MA14875-ICSAB1	67.1 !	90.8	85.2	83.6	83.8	88.7	76.1	71.3
11:10	MA14875-CCV1	75.8	88.6	88.8	89.2	89.4	95.7	91.8	84.8
11:13	MA14875-CCB1	84.9	88.1	91	91.5	92.4	97.3	98	93.2
11:17	MP33699-MB1	78.7	81.4	81.4	81.9	85.6	94	94	67.4 !
11:21	MP33699-B1	75.8	82.2	79	79.2	83.2	92.6	87.2	64.5 !
11:24	FA53625-18F	77	82.4	81.5	82.3	84.4	93.7	90.2	65.4 !
11:28	MP33699-D1	84.9	83.5	82.3	83	85.5	94.6	90.6	66.1 !
11:31	MP33699-SD1	87	89.5	91.2	91.3	92	97.2	97.9	84.1
11:35	MP33699-S1	80.4	82	79.4	79.9	81.5	92.1	85	61.1 !
11:39	MP33699-S2	74.4	83	79.5	79.7	82.4	92.7	85.5	61.5 !
11:42	MP33699-PS1	No results reported for the elements associated with this internal standard.							
11:46	ZZZZZZ	84.7	83.7	82.7	82.8	85	94.6	90.4	65.3 !
11:50	ZZZZZZ	101.5	89.9	77.6	77	79.9	86.1	71.3	56.1 !
11:57	MA14875-CCV2	87.7	92.1	90.6	91.5	90.3	97.3	92.8	85.9
12:01	MA14875-CCB2	92.1	91	92.4	93.2	92.9	98.4	99.1	93.9
12:04	ZZZZZZ	83.8	83.1	81.4	82.3	84.5	94.1	89.9	64.4 !
12:08	ZZZZZZ	84.6	83.5	82	82.3	84.7	94.8	89.8	65.3 !
12:11	ZZZZZZ	86.3	84.4	82.4	82.6	84.7	95	89.3	63.2 !
12:15	ZZZZZZ	83.5	85.1	82.5	82.8	84.9	95.4	89.3	65 !
12:19	ZZZZZZ	82.2	82.7	80.8	80.9	83.4	93.9	88.4	63.4 !
12:22	ZZZZZZ	84.4	82.6	81.3	81.5	83.3	94.6	90	64 !

INTERNAL STANDARD SUMMARY

Login Number: FA53627
 Account: EAENYS - EA Engineering
 Project: SCNJR: Picatinny Arsenal, Route 15, Picatinny Arsenal, NJ

File ID: XA050718M1.CSV Date Analyzed: 05/07/18 Methods: SW846 6020A
 Analyst: DM Run ID: MA14875
 Parameters: Cd

Time	Sample Description	Istd#1	Istd#2	Istd#3	Istd#4	Istd#5	Istd#6	Istd#7	Istd#8
12:26	ZZZZZZ	86.5	83.7	83.2	83.7	86	95.8	94.6	65.1 !
12:30	FA53627-1	82.3	82.6	81.7	81.4	84.1	94.6	91	63.7 !
12:33	MP33699-D2	81.9	81.8	80.5	80.9	82.9	93.9	91.1	63.3 !
12:37	MP33699-SD2	91.4	88.2	89.4	89.9	90.1	97.2	97.6	83.1
12:44	MA14875-CCV3	83.7	90.7	88.6	89.1	88	96.5	92.2	83
12:48	MA14875-CCB3	87.5	89.5	90.1	90.3	90.9	97.5	98.1	90.7
12:51	MP33699-S3	77.2	79.3	77.6	77.9	79.3	91.3	84.8	60.9 !
12:55	MP33699-S4	76.5	81.3	78.9	78.9	80.5	92.6	86.4	62.3 !
12:59	MP33699-PS2	No results reported for the elements associated with this internal standard.							
13:02	FA53627-2	86.4	84	83.1	83.3	85	95.9	92.2	64.9 !
13:06	FA53627-3	85.2	86	84.8	85.4	87.4	96.4	95.7	67.2 !
13:09	ZZZZZZ	83.7	83.5	81.9	82.1	83.4	94	90	64.6 !
13:13	ZZZZZZ	81.7	83.6	81.9	81.9	83.7	94.8	90.7	64.6 !
13:17	ZZZZZZ	85.9	82.3	81.6	81	82.6	94	90.1	64.6 !
13:20	MA14875-CRIA2	93	92.7	92.9	93.1	93.3	99.7	101	92.2
13:24	MA14875-ICSA2	70.1	87.9	80.8	79.5	79.7	86.4	75.2	68.5 !
13:31	MA14875-CCV4	80.8	87.8	87.7	87	86.3	95.4	91.8	83.2
13:35	MA14875-CCB4	87	87.2	88.8	89.3	89	96.7	98.3	89.4
13:39	MA14875-ICSAB2	66 !	89.8	82.1	80.8	80.4	87.8	75.5	68.9 !
13:46	MA14875-CCV5	78.3	87.1	86.2	86.7	86.2	94.7	91.4	80
13:49	MA14875-CCB5	76.3	78.6	80.7	81.1	80.6	87.1	88.9	81.5

! = Outside limits.

LEGEND:		CCV/CCB	
Istd#	Parameter	Limits	Limits
Istd#1	Lithium	70-130 %	70-130 %
Istd#2	Scandium	70-130 %	70-130 %
Istd#3	Germanium (72-2)	70-130 %	70-130 %
Istd#4	Germanium (74-2)	70-130 %	70-130 %
Istd#5	Indium	70-130 %	70-130 %
Istd#6	Terbium	70-130 %	70-130 %
Istd#7	Bismuth	70-130 %	70-130 %
Istd#8	Tellurium	70-130 %	70-130 %

BLANK RESULTS SUMMARY
Part 1 - Initial and Continuing Calibration Blanks

Login Number: FA53627
Account: EAENYS - EA Engineering
Project: SCNJR: Picatinny Arsenal, Route 15, Picatinny Arsenal, NJ

File ID: XA050718M1.CSV Date Analyzed: 05/07/18 Methods: SW846 6020A
QC Limits: result < RL Run ID: MA14875 Units: ug/l

Metal	Time: Sample ID: RL	IDL	10:51 ICB1		11:13 CCB1		12:01 CCB2		12:48 CCB3		final
			raw	final	raw	final	raw	final	raw	final	
Aluminum	100	4.4									
Antimony	1.0	.1									
Arsenic	1.0	.1									
Barium	1.0	.1									
Beryllium	1.0	.1									
Cadmium	1.0	.1	0.00480	<1.0	0.00444	<1.0	0.00702	<1.0	0.0115	<1.0	
Calcium	100	7.2									
Chromium	1.0	.1									
Cobalt	1.0	.1									
Copper	1.0	.1									
Iron	100	7.9	anr								
Lead	1.0	.1	anr								
Magnesium	100	5.2									
Manganese	1.0	.1									
Molybdenum	1.0	.1									
Nickel	1.0	.1									
Potassium	100	6.6									
Selenium	1.0	.11									
Silver	1.0	.1									
Sodium	100	4.8									
Strontium	1.0	.1									
Thallium	1.0	.1									
Tin	1.0	.1									
Titanium	1.0	.3									
Vanadium	1.0	.1									
Zinc	2.0	.29									

(*) Outside of QC limits
(anr) Analyte not requested

BLANK RESULTS SUMMARY
Part 1 - Initial and Continuing Calibration Blanks

Login Number: FA53627
Account: EAENYS - EA Engineering
Project: SCNJR: Picatinny Arsenal, Route 15, Picatinny Arsenal, NJ

File ID: XA050718M1.CSV Date Analyzed: 05/07/18 Methods: SW846 6020A
QC Limits: result < RL Run ID: MA14875 Units: ug/l

Metal	Sample ID:	Time:	13:35		13:49		
		RL	IDL	raw	final	raw	final
Aluminum		100	4.4				
Antimony		1.0	.1				
Arsenic		1.0	.1				
Barium		1.0	.1				
Beryllium		1.0	.1				
Cadmium		1.0	.1	0.0154	<1.0	0.0156	<1.0
Calcium		100	7.2				
Chromium		1.0	.1				
Cobalt		1.0	.1				
Copper		1.0	.1				
Iron		100	7.9	anr			
Lead		1.0	.1	anr			
Magnesium		100	5.2				
Manganese		1.0	.1				
Molybdenum		1.0	.1				
Nickel		1.0	.1				
Potassium		100	6.6				
Selenium		1.0	.11				
Silver		1.0	.1				
Sodium		100	4.8				
Strontium		1.0	.1				
Thallium		1.0	.1				
Tin		1.0	.1				
Titanium		1.0	.3				
Vanadium		1.0	.1				
Zinc		2.0	.29				

(*) Outside of QC limits
(anr) Analyte not requested

CALIBRATION CHECK STANDARDS SUMMARY
Initial and Continuing Calibration Checks

Login Number: FA53627
Account: EAENYS - EA Engineering
Project: SCNJR: Picatinny Arsenal, Route 15, Picatinny Arsenal, NJ

File ID: XA050718M1.CSV Date Analyzed: 05/07/18 Methods: SW846 6020A
QC Limits: 90 to 110 % Recovery Run ID: MA14875 Units: ug/l

Time:	10:48			11:10			11:57		
Sample ID:	ICV	ICV1	Results	CCV	CCV1	Results	CCV	CCV2	Results
Metal	True		% Rec	True		% Rec	True		% Rec

Aluminum									
Antimony									
Arsenic									
Barium									
Beryllium									
Cadmium	100	101	101.0	100	101	101.0	100	99.8	99.8
Calcium									
Chromium									
Cobalt									
Copper									
Iron		anr							
Lead		anr							
Magnesium									
Manganese									
Molybdenum									
Nickel									
Potassium									
Selenium									
Silver									
Sodium									
Strontium									
Thallium									
Tin									
Titanium									
Vanadium									
Zinc									

(*) Outside of QC limits
(anr) Analyte not requested

6.1.3
6

CALIBRATION CHECK STANDARDS SUMMARY
Initial and Continuing Calibration Checks

Login Number: FA53627
Account: EAENYS - EA Engineering
Project: SCNJR: Picatinny Arsenal, Route 15, Picatinny Arsenal, NJ

File ID: XA050718M1.CSV Date Analyzed: 05/07/18 Methods: SW846 6020A
QC Limits: 90 to 110 % Recovery Run ID: MA14875 Units: ug/l

Time:	12:44	CCV	CCV3	Results	% Rec	Time:	13:31	CCV	CCV4	Results	% Rec	Time:	13:46	CCV	CCV5	Results	% Rec
Metal		True				Metal		True				Metal		True			

Aluminum																	
Antimony																	
Arsenic																	
Barium																	
Beryllium																	
Cadmium	100	100		100.0	100	101		101.0	100	99.6	99.6						
Calcium																	
Chromium																	
Cobalt																	
Copper																	
Iron		anr															
Lead		anr															
Magnesium																	
Manganese																	
Molybdenum																	
Nickel																	
Potassium																	
Selenium																	
Silver																	
Sodium																	
Strontium																	
Thallium																	
Tin																	
Titanium																	
Vanadium																	
Zinc																	

(*) Outside of QC limits
(anr) Analyte not requested

6.1.3
6

HIGH STANDARD CHECK SUMMARY

Login Number: FA53627
 Account: EAENYS - EA Engineering
 Project: SCNJR: Picatinny Arsenal, Route 15, Picatinny Arsenal, NJ

File ID: XA050718M1.CSV Date Analyzed: 05/07/18 Methods: SW846 6020A
 QC Limits: 90 to 110 % Recovery Run ID: MA14875 Units: ug/l

Metal	Time:	Sample ID:	Date	Run ID:	Method:
	Time:	Sample ID:	Results	% Rec	Units:
	10:44	HSTD	HSTD1		
True					

Aluminum	
Antimony	
Arsenic	
Barium	
Beryllium	
Cadmium	200
Calcium	199
Chromium	
Cobalt	
Copper	
Iron	anr
Lead	anr
Magnesium	
Manganese	
Molybdenum	
Nickel	
Potassium	
Selenium	
Silver	
Sodium	
Strontium	
Thallium	
Tin	
Titanium	
Vanadium	
Zinc	

(*) Outside of QC limits
 (anr) Analyte not requested

6.1.4
6

LOW CALIBRATION CHECK STANDARDS SUMMARY

Login Number: FA53627
 Account: EAENYS - EA Engineering
 Project: SCNJR: Picatinny Arsenal, Route 15, Picatinny Arsenal, NJ

File ID: XA050718M1.CSV Date Analyzed: 05/07/18 Methods: SW846 6020A
 QC Limits: CRI 70-130% CRIA 80-120% Run ID: MA14875 Units: ug/l

Metal	Time:		10:55		13:20				
	Sample ID:	CRI	CRIA	CRIAl	Results	% Rec	CRIA2	Results	% Rec
Aluminum	True	100	True	100					
Antimony	True	1.0	True	1.0					
Arsenic	True	1.0	True	1.0					
Barium	True	1.0	True	1.0					
Beryllium	True	1.0	True	1.0					
Cadmium	True	1.0	True	1.06	106.0	1.06	True	106.0	1.06
Calcium	True	100	True	100					
Chromium	True	1.0	True	1.0					
Cobalt	True	1.0	True	1.0					
Copper	True	1.0	True	1.0					
Iron	True	100	True	100	anr				
Lead	True	1.0	True	1.0	anr				
Magnesium	True	100	True	100					
Manganese	True	1.0	True	1.0					
Molybdenum	True	1.0	True	1.0					
Nickel	True	1.0	True	1.0					
Potassium	True	100	True	100					
Selenium	True	1.0	True	1.0					
Silver	True	1.0	True	1.0					
Sodium	True	100	True	100					
Strontium	True	1.0	True	1.0					
Thallium	True	1.0	True	1.0					
Tin	True	1.0	True	1.0					
Titanium	True	1.0	True	1.0					
Vanadium	True	1.0	True	1.0					
Zinc	True	1.0	True	1.0					

(*) Outside of QC limits
 (anr) Analyte not requested

INTERFERING ELEMENT CHECK STANDARDS SUMMARY
Part 1 - ICSA and ICSAB Standards

Login Number: FA53627
 Account: EAENYS - EA Engineering
 Project: SCNJR: Picatinny Arsenal, Route 15, Picatinny Arsenal, NJ

File ID: XA050718M1.CSV Date Analyzed: 05/07/18 Methods: SW846 6020A
 QC Limits: 80 to 120 % Recovery Run ID: MA14875 Units: ug/l

Metal	Time:		10:59		11:02		13:24		13:39		
	Sample ID:	ICSA	ICSA	Results	% Rec	ICSA1	Results	% Rec	ICSA2	Results	ICSA2
Aluminum	100000	100000	97600	97.6	98100	98.1	97900	97.9	97000	97.0	
Antimony			0.0586		0.0512		0.0474		0.0494		
Arsenic		20	0.0844		19.5	97.5	0.0893		19.6	98.0	
Barium			0.0901		0.0803		0.0885		0.0874		
Beryllium			0.0174		0.00772		0.0145		0.0155		
Cadmium		20	0.388		18.4	92.0	0.386		18.5	92.5	
Calcium	100000	100000	94900	94.9	95000	95.0	94700	94.7	94100	94.1	
Chromium		20	1.30		21.3	106.5	1.31		21.5	107.5	
Cobalt		20	0.0147		19.3	96.5	0.0137		19.3	96.5	
Copper		20	0.0622		18.4	92.0	0.0180		18.3	91.5	
Iron	100000	100000	101000	101.0	102000	102.0	105000	105.0	104000	104.0	
Lead			0.117		0.131		0.112		0.127		
Magnesium	100000	100000	98900	98.9	99600	99.6	100000	100.0	99000	99.0	
Manganese		20	0.196		20.2	101.0	0.225		20.4	102.0	
Molybdenum	2000	2000	2060	103.0	2060	103.0	2150	107.5	2120	106.0	
Nickel		20	0.0713		18.7	93.5	0.0504		18.6	93.0	
Potassium	100000	100000	103000	103.0	104000	104.0	105000	105.0	104000	104.0	
Selenium			0.0886		0.0456		0.0744		0.0510		
Silver		20	0.0373		17.2	86.0	0.0252		17.1	85.5	
Sodium	100000	100000	99400	99.4	100000	100.0	101000	101.0	99700	99.7	
Strontium			0.985		1.00		1.00		1.00		
Thallium			0.0110		0.00789		0.00509		0.00889		
Tin			0.105		0.0806		0.0798		0.0901		
Titanium	2000	2000	2020	101.0	2030	101.5	2040	102.0	2010	100.5	
Vanadium			0.00276		0.00469		0.00426		0.00277		
Zinc		20	1.10		19.6	98.0	1.32		19.5	97.5	

(*) Outside of QC limits
 (anr) Analyte not requested

6.1.6
6

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: FA53627
 Account: EAENYS - EA Engineering
 Project: SCNJR: Picatinny Arsenal, Route 15, Picatinny Arsenal, NJ

QC Batch ID: MP33699
 Matrix Type: AQUEOUS

Methods: SW846 6020A
 Units: ug/l

Prep Date: 05/05/18

Metal	RL	IDL	MDL	MB raw	final
Aluminum	200	8.7	.22		
Antimony	2.0	.2	.2		
Arsenic	2.0	.2	.21		
Barium	2.0	.2	.2		
Beryllium	2.0	.2	.2		
Cadmium	2.0	.2	.2	0.011	<2.0
Calcium	200	14	36		
Chromium	2.0	.2	.2		
Cobalt	2.0	.2	.2		
Copper	2.0	.2	.2		
Iron	200	16	23		
Lead	2.0	.2	.2		
Magnesium	200	10	19		
Manganese	2.0	.2	.2		
Molybdenum	2.0	.2	.39		
Nickel	2.0	.2	.2		
Potassium	200	13	75		
Selenium	2.0	.22	.22		
Silver	2.0	.2	.2		
Sodium	200	9.6	24		
Strontium	2.0	.2	.2		
Thallium	2.0	.2	.2		
Tin	2.0	.2	.2		
Titanium	2.0	.61	.88		
Vanadium	2.0	.2	.24		
Zinc	4.0	.58	1.7		

Associated samples MP33699: FA53627-1, FA53627-2, FA53627-3

Results < IDL are shown as zero for calculation purposes

(*) Outside of QC limits

(anr) Analyte not requested

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: FA53627

Account: EAENYS - EA Engineering

Project: SCNJR: Picatinny Arsenal, Route 15, Picatinny Arsenal, NJ

QC Batch ID: MP33699
Matrix Type: AQUEOUSMethods: SW846 6020A
Units: ug/l

Prep Date:

05/05/18

05/05/18

Metal	FA53627-1 Original DUP	RPD	QC Limits	FA53627-1 Original MS	Spikelot MPICPMS1	% Rec	QC Limits
Aluminum							
Antimony							
Arsenic							
Barium							
Beryllium							
Cadmium	5.3	5.6	5.5	0-20	5.3	213	200
Calcium							
Chromium							
Cobalt							
Copper							
Iron	anr						
Lead	anr						
Magnesium							
Manganese							
Molybdenum							
Nickel							
Potassium							
Selenium							
Silver							
Sodium							
Strontium							
Thallium							
Tin							
Titanium							
Vanadium							
Zinc							

Associated samples MP33699: FA53627-1, FA53627-2, FA53627-3

Results < IDL are shown as zero for calculation purposes

(*) Outside of QC limits

(N) Matrix Spike Rec. outside of QC limits

(anr) Analyte not requested

6.2.2
6

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: FA53627

Account: EAENYS - EA Engineering

Project: SCNJR: Picatinny Arsenal, Route 15, Picatinny Arsenal, NJ

QC Batch ID: MP33699
Matrix Type: AQUEOUSMethods: SW846 6020A
Units: ug/l

Prep Date:

05/05/18

Metal	FA53627-1 Original MSD	Spikelot MPICPMS1	MSD % Rec	RPD	QC Limit
Aluminum					
Antimony					
Arsenic					
Barium					
Beryllium					
Cadmium	5.3	207	200	100.9	2.9
Calcium					
Chromium					
Cobalt					
Copper					
Iron	anr				
Lead	anr				
Magnesium					
Manganese					
Molybdenum					
Nickel					
Potassium					
Selenium					
Silver					
Sodium					
Strontium					
Thallium					
Tin					
Titanium					
Vanadium					
Zinc					

Associated samples MP33699: FA53627-1, FA53627-2, FA53627-3

Results < IDL are shown as zero for calculation purposes

(*) Outside of QC limits

(N) Matrix Spike Rec. outside of QC limits

(anr) Analyte not requested

6.2.2
6

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: FA53627

Account: EAENYS - EA Engineering

Project: SCNJR: Picatinny Arsenal, Route 15, Picatinny Arsenal, NJ

QC Batch ID: MP33699
Matrix Type: AQUEOUSMethods: SW846 6020A
Units: ug/l

Prep Date: 05/05/18

Metal	BSP Result	Spikelot MPICPMS1	QC % Rec	Limits
Aluminum				
Antimony				
Arsenic				
Barium				
Beryllium				
Cadmium	207	200	103.5	80-120
Calcium				
Chromium				
Cobalt				
Copper				
Iron	anr			
Lead	anr			
Magnesium				
Manganese				
Molybdenum				
Nickel				
Potassium				
Selenium				
Silver				
Sodium				
Strontium				
Thallium				
Tin				
Titanium				
Vanadium				
Zinc				

Associated samples MP33699: FA53627-1, FA53627-2, FA53627-3

Results < IDL are shown as zero for calculation purposes

(*) Outside of QC limits

(anr) Analyte not requested

6.2.3
6

SERIAL DILUTION RESULTS SUMMARY

Login Number: FA53627
 Account: EAENYS - EA Engineering
 Project: SCNJR: Picatinny Arsenal, Route 15, Picatinny Arsenal, NJ

QC Batch ID: MP33699
 Matrix Type: AQUEOUS

Methods: SW846 6020A
 Units: ug/l

Prep Date: 05/05/18 Analyte: 05/05/18

Metal	FA53625-18F Original	SDL 2:10	%DIF	QC Limits	FA53627-1 Original	SDL 2:10	%DIF	QC Limits
Aluminum								
Antimony								
Arsenic								
Barium								
Beryllium								
Cadmium	0.00	0.00		NC	0-10	5.31	5.85	10.0
Calcium								
Chromium								
Cobalt								
Copper								
Iron		anr						
Lead		anr						
Magnesium								
Manganese								
Molybdenum								
Nickel								
Potassium								
Selenium								
Silver								
Sodium								
Strontium								
Thallium								
Tin								
Titanium								
Vanadium								
Zinc								

Associated samples MP33699: FA53627-1, FA53627-2, FA53627-3

Results < IDL are shown as zero for calculation purposes

(*) Outside of QC limits

(anr) Analyte not requested

Instrument Detection Limits

Page 1 of 1

Job Number: FA53627

Account: EAENYS EA Engineering

Project: SCNJR: Picatinny Arsenal, Route 15, Picatinny Arsenal, NJ

Instrument ID: AGICPMS1

Effective Date: 05/21/16

Analyte	IDL ug/l
Aluminum	4.35
Antimony	.1
Arsenic	.1
Arsenic	.1
Barium	.1
Beryllium	.1
Boron	.5
Cadmium	.1
Cadmium	.1
Calcium	7.2
Calcium	7.2
Chromium	.1
Chromium	.1
Cobalt	.1
Cobalt	.1
Copper	.1
Copper	.1
Iron	7.9
Iron	7.9
Lead	.1
Magnesium	5.2
Manganese	.1
Manganese	.1
Molybdenum	.1
Nickel	.1
Nickel	.1
Potassium	6.57
Selenium	.11
Selenium	.11
Silver	.1
Sodium	4.8
Strontium	.1
Thallium	.1
Tin	.1
Tin	.1
Titanium	.303
Vanadium	.1
Vanadium	.1
Zinc	.29
Zinc	.29

The above applies to the following instrument runs:

MA14875

6.3
6

Instrument Linear Ranges

Page 1 of 1

Job Number: FA53627

Account: EAENYS EA Engineering

Project: SCNJR: Picatinny Arsenal, Route 15, Picatinny Arsenal, NJ

Instrument ID: AGICPMS1

Effective Date: 05/21/16

Analyte	Linear Range ug/l
Aluminum	100000
Antimony	1000
Arsenic	1000
Arsenic	1000
Barium	1000
Beryllium	1000
Cadmium	1000
Cadmium	1000
Calcium	100000
Calcium	100000
Chromium	1000
Chromium	1000
Cobalt	1000
Cobalt	1000
Copper	1000
Copper	1000
Iron	100000
Iron	100000
Lead	1000
Magnesium	100000
Manganese	1000
Manganese	1000
Molybdenum	1000
Nickel	1000
Nickel	1000
Potassium	100000
Selenium	1000
Selenium	1000
Silver	100
Sodium	100000
Strontium	1000
Thallium	1000
Tin	1000
Tin	1000
Titanium	1000
Vanadium	1000
Vanadium	1000
Zinc	1000
Zinc	1000

The above applies to the following instrument runs:

MA14875

6.3
6

Metals Analysis**Raw Data**

7

Quantitation Report

File Name 001CALB.d
File Path D:\2018\05-May\x050718m1.b
Method File
Method Path
Acq Time 5/7/2018 10:06
Sample Name Blank
Sample Type CalBlk
Comment
Prep Dilution 1.000
Auto Dilution N/A
Total Dilution 1.000
Operator Name admin
Acq Mode Spectrum
Cal Title
Cal Type External Calibration
Last Calib 5/7/2018 10:39
Bkg File
Bkg Mode Count Subtraction except for ISTD
Interference File
FQ Blank File
VIS Fit Point to Point

Tune Step 1 **Tune File**

FullQuant Table

Element	Mass	ISTD	Tune	Conc	Units	RSD(%)	CPS	Ratio	Det	Time(sec)	Rep
Cr			1	-0.003	ug/l	-44.14	1,211.37	3.456E-03	Pulse	0.50	3
As			1	-0.002	ug/l	-83.17	17.67	5.040E-05	Pulse	1.00	3
Mo			1	0.001	ug/l	72.48	28.67	5.335E-05	Pulse	0.50	3
Pb			1	0.007	ug/l	16.00	4,095.50	3.511E-04	Pulse	1.00	3
Be			1	-0.001	ug/l	0.00	0.00	0.000E+00	Pulse	2.00	3
Ag			1	0.000	ug/l	105.00	100.67	1.873E-04	Pulse	0.50	3
Ba			1	0.003	ug/l	40.76	40.67	1.136E-05	Pulse	0.50	3
Tl			1	0.001	ug/l	23.55	291.33	2.497E-05	Pulse	0.50	3
Sn			1	0.013	ug/l	37.18	1,161.16	3.242E-04	Pulse	0.30	3
Sr			1	0.001	ug/l	87.07	1,339.38	3.740E-04	Pulse	0.50	3
[Pb]			1	0.007	ug/l	34.38	1,943.45	1.666E-04	Pulse	0.50	3
Ca			1	0.363	ug/l	117.85	214.00	5.075E-04	Pulse	0.50	3
Ti			1	0.012	ug/l	86.11	6.00	1.423E-05	Pulse	0.50	3
Na			1	-0.028	ug/l	-97.30	10,640.50	2.523E-02	Pulse	1.00	3
Mg			1	-0.008	ug/l	-259.49	358.33	8.498E-04	Pulse	1.00	3
K			1	0.031	ug/l	1164.70	13,080.00	3.102E-02	Pulse	1.00	3
V			1	-0.004	ug/l	-49.93	626.01	1.484E-03	Pulse	0.50	3
Mn			1	0.003	ug/l	245.18	1,555.40	4.437E-03	Pulse	0.50	3
Fe			1	0.016	ug/l	153.02	43,757.76	1.248E-01	Pulse	0.50	3
Co			1	0.000	ug/l	-118.65	54.67	1.560E-04	Pulse	0.50	3
Ni			1	0.031	ug/l	63.47	1,700.08	4.853E-03	Pulse	0.50	3
Cu			1	0.189	ug/l	17.48	23,809.40	6.794E-02	Pulse	0.50	3
Zn			1	0.297	ug/l	13.65	3,472.66	6.462E-03	Pulse	1.00	3
Cd			1	0.000	ug/l	69.71	7.33	1.364E-05	Pulse	0.50	3
Al			1	0.015	ug/l	851.12	426.67	1.012E-03	Pulse	1.00	3
Se			1	-0.006	ug/l	-516.97	22.00	7.136E-04	Pulse	3.00	3
Sb			1	-0.002	ug/l	-27.10	159.33	2.965E-04	Pulse	1.00	3
Se			1	-0.058	ug/l	-57.47	30.44	9.850E-04	Pulse	3.00	3

ISTD Table

Tune	Element	Mass	CPS	RSD(%)	ISTD Recovery%	Det	Time(sec)	Rep
1	Bi		11,666,227.33	0.11	100.0	Analog	0.50	3
1	Sc		421,696.10	0.23	100.0	Pulse	0.30	3

Quantitation Report

1	Ge		350,501.81	0.60	100.0	Pulse	0.30	3
1	In		3,581,696.80	0.19	100.0	Pulse	0.30	3
1	Tb		15,294,676.67	0.50	100.0	Analog	0.50	3
1	Lu		9,059,156.33	1.03	100.0	Analog	0.50	3
1	Ge		537,402.58	0.14	100.0	Pulse	0.30	3
1	Te		30,886.03	1.19	100.0	Pulse	0.50	3
1	Li		3,308.07	2.27	100.0	Pulse	0.30	3

Quantitation Report

File Name 002CALB.d
File Path D:\2018\05-May\x050718m1.b
Method File
Method Path
Acq Time 5/7/2018 10:10
Sample Name Blank
Sample Type CalBlk
Comment
Prep Dilution 1.000
Auto Dilution N/A
Total Dilution 1.000
Operator Name admin
Acq Mode Spectrum
Cal Title
Cal Type External Calibration
Last Calib 5/7/2018 10:39
Bkg File
Bkg Mode Count Subtraction except for ISTD
Interference File
FQ Blank File
VIS Fit Point to Point

Tune Step 1 **Tune File**

FullQuant Table

Element	Mass	ISTD	Tune	Conc	Units	RSD(%)	CPS	Ratio	Det	Time(sec)	Rep
Cr			1	-0.004	ug/l	-142.46	1,170.04	3.391E-03	Pulse	0.50	3
As			1	-0.003	ug/l	-59.39	16.00	4.638E-05	Pulse	1.00	3
Mo			1	0.001	ug/l	163.98	40.67	7.663E-05	Pulse	0.50	3
Pb			1	0.001	ug/l	83.45	3,440.35	2.971E-04	Pulse	1.00	3
Be			1	0.007	ug/l	28.43	1.17	2.785E-06	Pulse	2.00	3
Ag			1	0.000	ug/l	-180.74	62.67	1.182E-04	Pulse	0.50	3
Ba			1	0.000	ug/l	515.93	24.67	6.951E-06	Pulse	0.50	3
Tl			1	0.000	ug/l	150.74	164.00	1.416E-05	Pulse	0.50	3
Sn			1	0.001	ug/l	604.45	996.70	2.807E-04	Pulse	0.30	3
Sr			1	0.007	ug/l	100.99	1,387.39	3.906E-04	Pulse	0.50	3
[Pb]			1	0.000	ug/l	290.74	1,624.08	1.402E-04	Pulse	0.50	3
Ca			1	-0.484	ug/l	-65.20	172.67	4.123E-04	Pulse	0.50	3
Ti			1	0.002	ug/l	529.28	2.00	4.803E-06	Pulse	0.50	3
Na			1	-0.051	ug/l	-56.93	10,506.76	2.509E-02	Pulse	1.00	3
Mg			1	-0.014	ug/l	-61.38	349.33	8.344E-04	Pulse	1.00	3
K			1	0.095	ug/l	123.02	13,039.31	3.114E-02	Pulse	1.00	3
V			1	-0.003	ug/l	-116.09	642.01	1.534E-03	Pulse	0.50	3
Mn			1	-0.001	ug/l	-854.16	1,495.40	4.333E-03	Pulse	0.50	3
Fe			1	0.067	ug/l	130.84	43,993.95	1.275E-01	Pulse	0.50	3
Co			1	0.001	ug/l	76.17	105.34	3.053E-04	Pulse	0.50	3
Ni			1	-0.003	ug/l	-70.88	1,278.72	3.705E-03	Pulse	0.50	3
Cu			1	0.011	ug/l	16.19	17,648.75	5.114E-02	Pulse	0.50	3
Zn			1	0.035	ug/l	112.64	2,407.82	4.542E-03	Pulse	1.00	3
Cd			1	0.001	ug/l	64.69	8.67	1.634E-05	Pulse	0.50	3
Al			1	-0.018	ug/l	-436.55	413.67	9.882E-04	Pulse	1.00	3
Se			1	-0.032	ug/l	-3.84	17.56	5.688E-04	Pulse	3.00	3
Sb			1	0.001	ug/l	100.05	202.00	3.811E-04	Pulse	1.00	3
Se			1	-0.081	ug/l	-68.33	28.44	9.215E-04	Pulse	3.00	3

ISTD Table

Tune	Element	Mass	CPS	RSD(%)	ISTD Recovery%	Det	Time(sec)	Rep
1	Bi		11,580,889.00	0.63	100.0	Analog	0.50	3
1	Sc		418,693.16	0.48	100.0	Pulse	0.30	3

Quantitation Report

1	Ge		345,103.36	0.47	100.0	Pulse	0.30	3
1	In		3,551,610.27	0.41	100.0	Pulse	0.30	3
1	Tb		15,413,710.33	0.55	100.0	Analog	0.50	3
1	Lu		8,997,360.67	1.06	100.0	Analog	0.50	3
1	Ge		530,076.72	0.31	100.0	Pulse	0.30	3
1	Te		30,863.31	0.29	100.0	Pulse	0.50	3
1	Li		3,186.94	1.78	100.0	Pulse	0.30	3

Quantitation Report

File Name 003CALB.d
File Path D:\2018\05-May\x050718m1.b
Method File
Method Path
Acq Time 5/7/2018 10:14
Sample Name CALSTD-1
Sample Type CalBlk
Comment
Prep Dilution 1.000
Auto Dilution N/A
Total Dilution 1.000
Operator Name admin
Acq Mode Spectrum
Cal Title
Cal Type External Calibration
Last Calib 5/7/2018 10:39
Bkg File
Bkg Mode Count Subtraction except for ISTD
Interference File
FQ Blank File
VIS Fit Point to Point

Tune Step **Tune File**
 1

FullQuant Table

Element	Mass	ISTD	Tune	Conc	Units	RSD(%)	CPS	Ratio	Det	Time(sec)	Rep
Cr			1	0.000	ug/l	---	1,260.71	3.621E-03	Pulse	0.50	3
As			1	0.000	ug/l	---	22.33	6.414E-05	Pulse	1.00	3
Mo			1	0.000	ug/l	---	20.00	3.757E-05	Pulse	0.50	3
Pb			1	0.000	ug/l	---	3,389.68	2.898E-04	Pulse	1.00	3
Be			1	0.000	ug/l	---	0.17	3.953E-07	Pulse	2.00	3
Ag			1	0.000	ug/l	---	69.33	1.306E-04	Pulse	0.50	3
Ba			1	0.000	ug/l	---	23.33	6.491E-06	Pulse	0.50	3
Tl			1	0.000	ug/l	---	138.00	1.179E-05	Pulse	0.50	3
Sn			1	0.000	ug/l	---	994.48	2.771E-04	Pulse	0.30	3
Sr			1	0.000	ug/l	---	1,326.72	3.694E-04	Pulse	0.50	3
[Pb]			1	0.000	ug/l	---	1,628.08	1.392E-04	Pulse	0.50	3
Ca			1	0.000	ug/l	---	195.34	4.667E-04	Pulse	0.50	3
Ti			1	0.000	ug/l	---	1.33	3.231E-06	Pulse	0.50	3
Na			1	0.000	ug/l	---	10,623.15	2.540E-02	Pulse	1.00	3
Mg			1	0.000	ug/l	---	364.67	8.720E-04	Pulse	1.00	3
K			1	0.000	ug/l	---	12,944.91	3.096E-02	Pulse	1.00	3
V			1	0.000	ug/l	---	690.68	1.652E-03	Pulse	0.50	3
Mn			1	0.000	ug/l	---	1,516.73	4.357E-03	Pulse	0.50	3
Fe			1	0.000	ug/l	---	43,177.80	1.240E-01	Pulse	0.50	3
Co			1	0.000	ug/l	---	66.00	1.897E-04	Pulse	0.50	3
Ni			1	0.000	ug/l	---	1,328.05	3.814E-03	Pulse	0.50	3
Cu			1	0.000	ug/l	---	17,427.21	5.006E-02	Pulse	0.50	3
Zn			1	0.000	ug/l	---	2,279.14	4.285E-03	Pulse	1.00	3
Cd			1	0.000	ug/l	---	4.00	7.502E-06	Pulse	0.50	3
Al			1	0.000	ug/l	---	418.67	1.001E-03	Pulse	1.00	3
Se			1	0.000	ug/l	---	22.67	7.456E-04	Pulse	3.00	3
Sb			1	0.000	ug/l	---	187.67	3.529E-04	Pulse	1.00	3
Se			1	0.000	ug/l	---	34.78	1.146E-03	Pulse	3.00	3

ISTD Table

Tune	Element	Mass	CPS	RSD(%)	ISTD Recovery%	Det	Time(sec)	Rep
1	Bi		11,695,586.33	0.58	100.0	Analog	0.50	3
1	Sc		418,217.40	1.17	100.0	Pulse	0.30	3

Quantitation Report

1	Ge		348,150.34	0.28	100.0	Pulse	0.30	3
1	In		3,590,281.52	0.52	100.0	Pulse	0.30	3
1	Tb		15,444,954.33	0.99	100.0	Analog	0.50	3
1	Lu		9,050,771.67	1.36	100.0	Analog	0.50	3
1	Ge		531,895.69	0.80	100.0	Pulse	0.30	3
1	Te		30,407.24	1.62	100.0	Pulse	0.50	3
1	Li		3,379.19	4.23	100.0	Pulse	0.30	3

Quantitation Report

File Name 004CALS.d
File Path D:\2018\05-May\x\050718m1.b
Method File
Method Path
Acq Time 5/7/2018 10:18
Sample Name CALSTD-2
Sample Type CalStd
Comment
Prep Dilution 1.000
Auto Dilution N/A
Total Dilution 1.000
Operator Name admin
Acq Mode Spectrum
Cal Title
Cal Type External Calibration
Last Calib 5/7/2018 10:39
Bkg File
Bkg Mode Count Subtraction except for ISTD
Interference File
FQ Blank File
VIS Fit Point to Point

Tune Step **Tune File**
 1

FullQuant Table

Element	Mass	ISTD	Tune	Conc	Units	RSD(%)	CPS	Ratio	Det	Time(sec)	Rep
Cr			1	0.086	ug/l	2.54	3,207.61	9.261E-03	Pulse	0.50	3
As			1	0.098	ug/l	3.82	246.67	7.122E-04	Pulse	1.00	3
Mo			1	0.096	ug/l	3.13	1,590.07	3.019E-03	Pulse	0.50	3
Pb			1	0.134	ug/l	1.51	16,707.16	1.426E-03	Pulse	1.00	3
Be			1	0.118	ug/l	27.04	17.17	4.124E-05	Pulse	2.00	3
Ag			1	0.103	ug/l	1.23	6,548.51	1.243E-02	Pulse	0.50	3
Ba			1	0.106	ug/l	6.92	603.34	1.689E-04	Pulse	0.50	3
Tl			1	0.100	ug/l	3.30	14,897.86	1.272E-03	Pulse	0.50	3
Sn			1	0.100	ug/l	20.42	2,326.83	6.517E-04	Pulse	0.30	3
Sr			1	0.096	ug/l	7.89	2,350.16	6.580E-04	Pulse	0.50	3
[Pb]			1	0.137	ug/l	2.63	7,935.86	6.774E-04	Pulse	0.50	3
Ca			1	11.907	ug/l	1.86	750.69	1.804E-03	Pulse	0.50	3
Ti			1	0.119	ug/l	28.61	47.33	1.137E-04	Pulse	0.50	3
Na			1	10.343	ug/l	0.44	36,856.71	8.857E-02	Pulse	1.00	3
Mg			1	10.496	ug/l	0.10	11,866.52	2.852E-02	Pulse	1.00	3
K			1	10.215	ug/l	3.10	21,225.71	5.101E-02	Pulse	1.00	3
V			1	0.099	ug/l	7.32	2,292.81	5.510E-03	Pulse	0.50	3
Mn			1	0.000	ug/l	1070.94	1,512.06	4.365E-03	Pulse	0.50	3
Fe			1	8.038	ug/l	0.84	186,476.35	5.384E-01	Pulse	0.50	3
Co			1	0.098	ug/l	2.06	4,264.48	1.231E-02	Pulse	0.50	3
Ni			1	0.085	ug/l	5.82	2,317.48	6.692E-03	Pulse	0.50	3
Cu			1	0.012	ug/l	79.28	17,718.81	5.116E-02	Pulse	0.50	3
Zn			1	0.493	ug/l	10.20	4,157.12	7.895E-03	Pulse	1.00	3
Cd			1	0.105	ug/l	6.87	782.69	1.486E-03	Pulse	0.50	3
Al			1	13.359	ug/l	2.13	4,413.49	1.061E-02	Pulse	1.00	3
Se			1	0.063	ug/l	14.56	33.22	1.090E-03	Pulse	3.00	3
Sb			1	0.100	ug/l	5.82	1,622.08	3.080E-03	Pulse	1.00	3
Se			1	-0.035	ug/l	-155.24	31.89	1.048E-03	Pulse	3.00	3

ISTD Table

Tune Element	Mass	CPS	RSD(%)	ISTD Recovery%	Det	Time(sec)	Rep
1 Bi		11,714,547.00	0.43	100.2	Analog	0.50	3

Quantitation Report

Tune	Element	Mass	CPS	RSD(%)	ISTD Recovery%	Det	Time(sec)	Rep
1	Sc		416,130.36	0.38	99.5	Pulse	0.30	3
1	Ge		346,345.40	0.53	99.5	Pulse	0.30	3
1	In		3,571,202.78	0.77	99.5	Pulse	0.30	3
1	Tb		15,411,322.00	0.61	99.8	Analog	0.50	3
1	Lu		8,988,049.33	0.34	99.3	Analog	0.50	3
1	Ge		526,639.91	0.46	99.0	Pulse	0.30	3
1	Te		30,494.74	2.72	100.3	Pulse	0.50	3
1	Li		3,278.06	3.20	97.0	Pulse	0.30	3

Quantitation Report

File Name 005CALS.d
File Path D:\2018\05-May\x\050718m1.b
Method File
Method Path
Acq Time 5/7/2018 10:22
Sample Name CALSTD-3
Sample Type CalStd
Comment
Prep Dilution 1.000
Auto Dilution N/A
Total Dilution 1.000
Operator Name admin
Acq Mode Spectrum
Cal Title
Cal Type External Calibration
Last Calib 5/7/2018 10:39
Bkg File
Bkg Mode Count Subtraction except for ISTD
Interference File
FQ Blank File
VIS Fit Point to Point

Tune Step **Tune File**
 1

FullQuant Table

Element	Mass	ISTD	Tune	Conc	Units	RSD(%)	CPS	Ratio	Det	Time(sec)	Rep
Cr			1	0.992	ug/l	0.64	23,325.28	6.842E-02	Pulse	0.50	3
As			1	0.984	ug/l	1.26	2,232.47	6.549E-03	Pulse	1.00	3
Mo			1	0.968	ug/l	1.30	15,651.88	3.004E-02	Pulse	0.50	3
Pb			1	1.014	ug/l	0.42	102,434.58	8.860E-03	Pulse	1.00	3
Be			1	0.996	ug/l	6.63	142.17	3.462E-04	Pulse	2.00	3
Ag			1	1.021	ug/l	0.87	63,884.10	1.226E-01	Pulse	0.50	3
Ba			1	1.004	ug/l	3.54	5,466.85	1.550E-03	Pulse	0.50	3
Tl			1	0.980	ug/l	1.04	143,363.91	1.240E-02	Pulse	0.50	3
Sn			1	1.166	ug/l	2.11	16,318.40	4.628E-03	Pulse	0.30	3
Sr			1	1.000	ug/l	0.35	11,951.80	3.389E-03	Pulse	0.50	3
[Pb]			1	1.032	ug/l	1.26	48,624.12	4.206E-03	Pulse	0.50	3
Ca			1	101.648	ug/l	5.40	4,879.96	1.188E-02	Pulse	0.50	3
Ti			1	0.872	ug/l	11.34	332.67	8.101E-04	Pulse	0.50	3
Na			1	103.759	ug/l	0.62	270,654.76	6.591E-01	Pulse	1.00	3
Mg			1	103.304	ug/l	0.79	112,092.75	2.729E-01	Pulse	1.00	3
K			1	100.556	ug/l	1.19	93,772.96	2.283E-01	Pulse	1.00	3
V			1	0.960	ug/l	1.91	16,094.00	3.919E-02	Pulse	0.50	3
Mn			1	1.058	ug/l	2.37	11,662.87	3.421E-02	Pulse	0.50	3
Fe			1	99.876	ug/l	0.82	1,797,645.92	5.273E+00	Pulse	0.50	3
Co			1	1.015	ug/l	0.77	42,920.66	1.259E-01	Pulse	0.50	3
Ni			1	1.010	ug/l	1.60	12,974.40	3.806E-02	Pulse	0.50	3
Cu			1	0.991	ug/l	1.52	49,047.38	1.439E-01	Pulse	0.50	3
Zn			1	1.736	ug/l	1.82	8,865.05	1.701E-02	Pulse	1.00	3
Cd			1	1.031	ug/l	1.16	7,561.57	1.451E-02	Pulse	0.50	3
Al			1	103.075	ug/l	0.43	30,846.05	7.511E-02	Pulse	1.00	3
Se			1	0.891	ug/l	4.94	169.22	5.614E-03	Pulse	3.00	3
Sb			1	0.984	ug/l	0.17	14,220.83	2.729E-02	Pulse	1.00	3
Se			1	0.811	ug/l	3.00	102.11	3.388E-03	Pulse	3.00	3

ISTD Table

Tune Element	Mass	CPS	RSD(%)	ISTD Recovery%	Det	Time(sec)	Rep
1 Bi		11,561,376.67	0.38	98.9	Analog	0.50	3

Quantitation Report

Tune	Element	Mass	CPS	RSD(%)	ISTD Recovery%	Det	Time(sec)	Rep
1	Sc		410,672.66	0.33	98.2	Pulse	0.30	3
1	Ge		340,925.79	1.00	97.9	Pulse	0.30	3
1	In		3,526,544.58	0.45	98.2	Pulse	0.30	3
1	Tb		15,188,956.00	0.40	98.3	Analog	0.50	3
1	Lu		8,914,852.00	0.65	98.5	Analog	0.50	3
1	Ge		521,128.68	0.49	98.0	Pulse	0.30	3
1	Te		30,140.78	0.64	99.1	Pulse	0.50	3
1	Li		3,214.72	1.00	95.1	Pulse	0.30	3

Quantitation Report

File Name 006CALS.d
File Path D:\2018\05-May\x050718m1.b
Method File
Method Path
Acq Time 5/7/2018 10:25
Sample Name CALSTD-4
Sample Type CalStd
Comment
Prep Dilution 1.000
Auto Dilution N/A
Total Dilution 1.000
Operator Name admin
Acq Mode Spectrum
Cal Title
Cal Type External Calibration
Last Calib 5/7/2018 10:39
Bkg File
Bkg Mode Count Subtraction except for ISTD
Interference File
FQ Blank File
VIS Fit Point to Point

Tune Step 1 **Tune File**

FullQuant Table

Element	Mass	ISTD	Tune	Conc	Units	RSD(%)	CPS	Ratio	Det	Time(sec)	Rep
Cr			1	10.507	ug/l	0.71	228,131.81	6.899E-01	Pulse	0.50	3
As			1	10.565	ug/l	0.15	23,050.53	6.970E-02	Pulse	1.00	3
Mo			1	10.057	ug/l	0.92	159,301.95	3.117E-01	Pulse	0.50	3
Pb			1	10.294	ug/l	0.57	994,480.23	8.729E-02	Pulse	1.00	3
Be			1	11.118	ug/l	3.07	1,535.56	3.861E-03	Pulse	2.00	3
Ag			1	10.608	ug/l	0.16	650,076.19	1.272E+00	Pulse	0.50	3
Ba			1	10.366	ug/l	2.27	54,153.92	1.594E-02	Pulse	0.50	3
Tl			1	10.199	ug/l	1.56	1,468,743.33	1.289E-01	Pulse	0.50	3
Sn			1	10.379	ug/l	0.89	132,530.48	3.900E-02	Pulse	0.30	3
Sr			1	10.119	ug/l	0.60	105,039.99	3.091E-02	Pulse	0.50	3
[Pb]			1	10.330	ug/l	1.73	465,542.74	4.086E-02	Pulse	0.50	3
Ca			1	1035.463	ug/l	1.14	46,438.01	1.168E-01	Pulse	0.50	3
Tl			1	10.328	ug/l	0.74	3,803.05	9.560E-03	Pulse	0.50	3
Na			1	1052.198	ug/l	0.47	2,566,064.92	6.451E+00	Pulse	1.00	3
Mg			1	1062.212	ug/l	0.44	1,113,134.29	2.798E+00	Pulse	1.00	3
K			1	1049.186	ug/l	0.06	831,504.69	2.090E+00	Pulse	1.00	3
V			1	10.399	ug/l	0.23	162,465.03	4.084E-01	Pulse	0.50	3
Mn			1	10.515	ug/l	0.70	99,535.59	3.010E-01	Pulse	0.50	3
Fe			1	1046.438	ug/l	0.47	17,881,785.33	5.407E+01	Analog	0.50	3
Co			1	10.537	ug/l	1.03	431,834.51	1.306E+00	Pulse	0.50	3
Ni			1	10.847	ug/l	0.92	122,922.14	3.717E-01	Pulse	0.50	3
Cu			1	10.890	ug/l	0.21	357,303.82	1.080E+00	Pulse	0.50	3
Zn			1	11.590	ug/l	1.36	45,610.98	8.925E-02	Pulse	1.00	3
Cd			1	10.679	ug/l	0.69	76,745.32	1.502E-01	Pulse	0.50	3
Al			1	1064.583	ug/l	0.19	304,860.39	7.664E-01	Pulse	1.00	3
Se			1	9.866	ug/l	2.81	1,579.40	5.465E-02	Pulse	3.00	3
Sb			1	10.258	ug/l	0.55	143,746.30	2.813E-01	Pulse	1.00	3
Se			1	9.628	ug/l	3.10	801.91	2.775E-02	Pulse	3.00	3

ISTD Table

Tune	Element	Mass	CPS	RSD(%)	ISTD Recovery%	Det	Time(sec)	Rep
1	Bi		11,394,043.33	1.48	97.4	Analog	0.50	3
1	Sc		397,775.72	1.09	95.1	Pulse	0.30	3
1	Ge		330,708.82	0.97	95.0	Pulse	0.30	3

Quantitation Report

Tune	Element	Mass	CPS	RSD(%)	ISTD Recovery%	Det	Time(sec)	Rep
1	In		3,398,449.31	1.30	94.7	Pulse	0.30	3
1	Tb		15,013,925.33	0.60	97.2	Analog	0.50	3
1	Lu		8,794,119.67	0.24	97.2	Analog	0.50	3
1	Ge		511,084.53	0.68	96.1	Pulse	0.30	3
1	Te		28,896.09	0.80	95.0	Pulse	0.50	3
1	Li		3,145.81	6.25	93.1	Pulse	0.30	3

Quantitation Report

File Name 007CALS.d
File Path D:\2018\05-May\x050718m1.b
Method File
Method Path
Acq Time 5/7/2018 10:29
Sample Name CALSTD-5
Sample Type CalStd
Comment
Prep Dilution 1.000
Auto Dilution N/A
Total Dilution 1.000
Operator Name admin
Acq Mode Spectrum
Cal Title
Cal Type External Calibration
Last Calib 5/7/2018 10:39
Bkg File
Bkg Mode Count Subtraction except for ISTD
Interference File
FQ Blank File
VIS Fit Point to Point

Tune Step 1
Tune File

FullQuant Table

Element	Mass	ISTD	Tune	Conc	Units	RSD(%)	CPS	Ratio	Det	Time(sec)	Rep
Cr			1	49.207	ug/l	0.53	1,047,290.29	3.217E+00	Pulse	0.50	3
As			1	49.973	ug/l	0.49	107,240.84	3.294E-01	Pulse	1.00	3
Mo			1	48.984	ug/l	0.36	752,147.42	1.518E+00	Pulse	0.50	3
Pb			1	49.217	ug/l	0.24	4,584,578.83	4.162E-01	Pulse	1.00	3
Be			1	52.381	ug/l	0.88	7,091.74	1.819E-02	Pulse	2.00	3
Ag			1	50.297	ug/l	0.48	2,987,978.00	6.030E+00	Pulse	0.50	3
Ba			1	49.875	ug/l	0.95	254,722.85	7.666E-02	Pulse	0.50	3
Tl			1	49.028	ug/l	0.14	6,825,462.00	6.197E-01	Analog	0.50	3
Sn			1	50.485	ug/l	0.52	626,823.01	1.886E-01	Pulse	0.30	3
Sr			1	49.004	ug/l	0.78	492,710.85	1.483E-01	Pulse	0.50	3
[Pb]			1	49.624	ug/l	1.17	2,156,244.33	1.958E-01	Pulse	0.50	3
Ca			1	4970.362	ug/l	1.24	217,786.97	5.587E-01	Pulse	0.50	3
Tl			1	49.541	ug/l	0.95	17,876.18	4.585E-02	Pulse	0.50	3
Na			1	4980.893	ug/l	0.60	11,868,677.00	3.044E+01	Analog	1.00	3
Mg			1	5041.655	ug/l	0.82	5,176,952.17	1.328E+01	Analog	1.00	3
K			1	4989.268	ug/l	0.47	3,830,169.50	9.824E+00	Pulse	1.00	3
V			1	49.454	ug/l	0.89	754,800.85	1.936E+00	Pulse	0.50	3
Mn			1	49.015	ug/l	0.59	451,545.14	1.387E+00	Pulse	0.50	3
Fe			1	4933.642	ug/l	0.62	82,833,874.67	2.545E+02	Analog	0.50	3
Co			1	49.869	ug/l	0.21	2,011,548.58	6.179E+00	Pulse	0.50	3
Ni			1	50.827	ug/l	0.87	562,391.52	1.728E+00	Pulse	0.50	3
Cu			1	51.112	ug/l	0.38	1,590,459.17	4.886E+00	Pulse	0.50	3
Zn			1	52.012	ug/l	0.39	191,042.12	3.856E-01	Pulse	1.00	3
Cd			1	51.137	ug/l	0.47	356,287.95	7.190E-01	Pulse	0.50	3
Al			1	4971.404	ug/l	0.49	1,393,905.00	3.575E+00	Pulse	1.00	3
Se			1	47.756	ug/l	3.33	7,214.58	2.617E-01	Pulse	3.00	3
Sb			1	49.771	ug/l	0.85	675,470.58	1.363E+00	Pulse	1.00	3
Se			1	47.758	ug/l	1.82	3,670.80	1.331E-01	Pulse	3.00	3

ISTD Table

Tune	Element	Mass	CPS	RSD(%)	ISTD Recovery%	Det	Time(sec)	Rep
1	Bi		11,014,390.67	0.25	94.2	Analog	0.50	3
1	Sc		389,880.06	1.42	93.2	Pulse	0.30	3
1	Ge		325,518.00	0.61	93.5	Pulse	0.30	3

Quantitation Report

Tune	Element	Mass	CPS	RSD(%)	ISTD Recovery%	Det	Time(sec)	Rep
1	In		3,323,140.35	1.10	92.6	Pulse	0.30	3
1	Tb		14,928,530.67	0.88	96.7	Analog	0.50	3
1	Lu		8,742,090.33	0.36	96.6	Analog	0.50	3
1	Ge		495,494.13	1.20	93.2	Pulse	0.30	3
1	Te		27,582.15	2.21	90.7	Pulse	0.50	3
1	Li		2,968.02	4.27	87.8	Pulse	0.30	3

Quantitation Report

File Name 008CALS.d
File Path D:\2018\05-May\x\050718m1.b
Method File
Method Path
Acq Time 5/7/2018 10:33
Sample Name CALSTD-6
Sample Type CalStd
Comment
Prep Dilution 1.000
Auto Dilution N/A
Total Dilution 1.000
Operator Name admin
Acq Mode Spectrum
Cal Title
Cal Type External Calibration
Last Calib 5/7/2018 10:39
Bkg File
Bkg Mode Count Subtraction except for ISTD
Interference File
FQ Blank File
VIS Fit Point to Point

Tune Step **Tune File**
 1

FullQuant Table

Element	Mass	ISTD	Tune	Conc	Units	RSD(%)	CPS	Ratio	Det	Time(sec)	Rep
Cr			1	100.417	ug/l	0.69	2,082,774.63	6.562E+00	Pulse	0.50	3
As			1	100.912	ug/l	0.72	211,126.80	6.652E-01	Pulse	1.00	3
Mo			1	100.267	ug/l	1.42	1,507,296.96	3.107E+00	Pulse	0.50	3
Pb			1	99.665	ug/l	0.25	9,040,397.67	8.426E-01	Analog	1.00	3
Be			1	102.972	ug/l	1.09	13,758.30	3.576E-02	Pulse	2.00	3
Ag			1	99.791	ug/l	0.65	5,804,074.67	1.196E+01	Pulse	0.50	3
Ba			1	100.326	ug/l	0.60	506,401.26	1.542E-01	Pulse	0.50	3
Tl			1	100.065	ug/l	0.84	13,569,770.67	1.265E+00	Analog	0.50	3
Sn			1	100.782	ug/l	1.04	1,235,726.90	3.763E-01	Pulse	0.30	3
Sr			1	100.384	ug/l	0.76	996,279.65	3.034E-01	Pulse	0.50	3
[Pb]			1	100.402	ug/l	1.40	4,248,180.17	3.959E-01	Pulse	0.50	3
Ca			1	10045.296	ug/l	1.51	434,275.25	1.129E+00	Pulse	0.50	3
Ti			1	100.486	ug/l	1.05	35,783.96	9.299E-02	Pulse	0.50	3
Na			1	10124.046	ug/l	1.25	23,799,449.33	6.185E+01	Analog	1.00	3
Mg			1	10120.470	ug/l	1.06	10,256,540.00	2.666E+01	Analog	1.00	3
K			1	10057.387	ug/l	0.89	7,608,219.67	1.977E+01	Analog	1.00	3
V			1	100.220	ug/l	1.58	1,509,072.17	3.922E+00	Pulse	0.50	3
Mn			1	100.038	ug/l	0.41	897,145.77	2.827E+00	Pulse	0.50	3
Fe			1	10054.984	ug/l	0.36	164,570,917.33	5.185E+02	Analog	0.50	3
Co			1	100.591	ug/l	0.13	3,956,136.92	1.246E+01	Pulse	0.50	3
Ni			1	102.101	ug/l	0.73	1,100,283.63	3.467E+00	Pulse	0.50	3
Cu			1	102.489	ug/l	0.07	3,093,624.67	9.747E+00	Pulse	0.50	3
Zn			1	103.131	ug/l	0.32	368,824.92	7.603E-01	Pulse	1.00	3
Cd			1	102.722	ug/l	0.75	700,669.35	1.444E+00	Pulse	0.50	3
Al			1	10101.696	ug/l	1.22	2,795,045.42	7.264E+00	Pulse	1.00	3
Se			1	97.253	ug/l	1.56	14,124.76	5.321E-01	Pulse	3.00	3
Sb			1	100.675	ug/l	0.50	1,337,598.96	2.757E+00	Pulse	1.00	3
Se			1	98.557	ug/l	0.87	7,260.16	2.735E-01	Pulse	3.00	3

ISTD Table

Tune	Element	Mass	CPS	RSD(%)	ISTD Recovery%	Det	Time(sec)	Rep
1	Bi		10,729,280.33	0.31	91.7	Analog	0.50	3
1	Sc		384,804.15	0.97	92.0	Pulse	0.30	3
1	Ge		317,398.73	0.66	91.2	Pulse	0.30	3
1	In		3,284,363.48	0.90	91.5	Pulse	0.30	3
1	Tb		14,832,398.33	0.88	96.0	Analog	0.50	3
1	Lu		8,759,279.67	1.18	96.8	Analog	0.50	3

Quantitation Report

Tune	Element	Mass	CPS	RSD(%)	ISTD Recovery%	Det	Time(sec)	Rep
1	Ge		485,116.84	0.54	91.2	Pulse	0.30	3
1	Te		26,549.26	1.77	87.3	Pulse	0.50	3
1	Li		2,842.44	3.29	84.1	Pulse	0.30	3

Quantitation Report

File Name 009CALS.d
File Path D:\2018\05-May\x\050718m1.b
Method File
Method Path
Acq Time 5/7/2018 10:37
Sample Name CALSTD-7
Sample Type CalStd
Comment
Prep Dilution 1.000
Auto Dilution N/A
Total Dilution 1.000
Operator Name admin
Acq Mode Spectrum
Cal Title
Cal Type External Calibration
Last Calib 5/7/2018 10:39
Bkg File
Bkg Mode Count Subtraction except for ISTD
Interference File
FQ Blank File
VIS Fit Point to Point

Tune Step **Tune File**
 1

FullQuant Table

Element	Mass	ISTD	Tune	Conc	Units	RSD(%)	CPS	Ratio	Det	Time(sec)	Rep
Cr			1	199.964	ug/l	0.27	4,121,949.08	1.306E+01	Pulse	0.50	3
As			1	199.523	ug/l	0.84	414,967.23	1.315E+00	Pulse	1.00	3
Mo			1	200.118	ug/l	0.60	2,982,530.50	6.201E+00	Pulse	0.50	3
Pb			1	200.348	ug/l	0.13	17,469,630.67	1.694E+00	Analog	1.00	3
Be			1	197.863	ug/l	0.45	26,583.31	6.871E-02	Pulse	2.00	3
Ag			1	140.294	ug/l	0.39	8,089,712.67	1.682E+01	Analog	0.50	3
Ba			1	199.850	ug/l	0.87	999,675.00	3.071E-01	Pulse	0.50	3
Tl			1	200.201	ug/l	0.33	26,102,612.67	2.530E+00	Analog	0.50	3
Sn			1	199.468	ug/l	0.50	2,422,980.11	7.444E-01	Pulse	0.30	3
Sr			1	200.051	ug/l	1.13	1,966,340.38	6.042E-01	Pulse	0.50	3
[Pb]			1	199.876	ug/l	0.24	8,129,810.50	7.881E-01	Analog	0.50	3
Ca			1	19982.979	ug/l	0.79	868,459.17	2.245E+00	Pulse	0.50	3
Ti			1	199.856	ug/l	0.78	71,561.84	1.849E-01	Pulse	0.50	3
Na			1	19940.125	ug/l	0.10	47,126,406.67	1.218E+02	Analog	1.00	3
Mg			1	19926.224	ug/l	0.54	20,305,510.00	5.248E+01	Analog	1.00	3
K			1	19971.527	ug/l	0.34	15,179,776.67	3.923E+01	Analog	1.00	3
V			1	200.007	ug/l	0.57	3,027,787.83	7.825E+00	Pulse	0.50	3
Mn			1	200.201	ug/l	1.17	1,783,400.58	5.652E+00	Pulse	0.50	3
Fe			1	19986.777	ug/l	0.25	325,164,458.67	1.031E+03	Analog	0.50	3
Co			1	199.710	ug/l	0.35	7,808,241.50	2.475E+01	Analog	0.50	3
Ni			1	198.700	ug/l	0.57	2,127,584.42	6.743E+00	Pulse	0.50	3
Cu			1	198.433	ug/l	1.23	5,939,490.17	1.882E+01	Analog	0.50	3
Zn			1	197.848	ug/l	0.30	699,575.58	1.455E+00	Pulse	1.00	3
Cd			1	198.321	ug/l	0.84	1,341,086.17	2.789E+00	Pulse	0.50	3
Al			1	19953.054	ug/l	0.57	5,550,992.83	1.435E+01	Analog	1.00	3
Se			1	201.942	ug/l	2.27	27,310.88	1.104E+00	Pulse	3.00	3
Sb			1	199.707	ug/l	0.42	2,630,380.67	5.469E+00	Pulse	1.00	3
Se			1	201.301	ug/l	2.49	13,787.54	5.574E-01	Pulse	3.00	3

ISTD Table

Tune	Element	Mass	CPS	RSD(%)	ISTD Recovery%	Det	Time(sec)	Rep
1	Bi		10,315,690.67	0.19	88.2	Analog	0.50	3
1	Sc		386,922.63	0.99	92.5	Pulse	0.30	3
1	Ge		315,537.73	0.71	90.6	Pulse	0.30	3
1	In		3,254,855.91	1.01	90.7	Pulse	0.30	3
1	Tb		14,640,154.67	0.65	94.8	Analog	0.50	3
1	Lu		8,672,619.33	0.45	95.8	Analog	0.50	3

Quantitation Report

Tune	Element	Mass	CPS	RSD(%)	ISTD Recovery%	Det	Time(sec)	Rep
1	Ge		480,946.67	0.70	90.4	Pulse	0.30	3
1	Te		24,744.74	2.30	81.4	Pulse	0.50	3
1	Li		2,736.86	4.09	81.0	Pulse	0.30	3

Quantitation Report

File Name 010HSAG.d
File Path D:\2018\05-May\x\050718m1.b
Method File
Method Path
Acq Time 5/7/2018 10:40
Sample Name HSTD (Ag)
Sample Type HSTD_Ag
Comment =std 5
Prep Dilution 1.000
Auto Dilution N/A
Total Dilution 1.000
Operator Name admin
Acq Mode Spectrum
Cal Title
Cal Type External Calibration
Last Calib 5/7/2018 10:39
Bkg File
Bkg Mode Count Subtraction except for ISTD
Interference File
FQ Blank File
VIS Fit Point to Point

Tune Step **Tune File**
 1

FullQuant Table

Element	Mass	ISTD	Tune	Conc	Units	RSD(%)	CPS	Ratio	Det	Time(sec)	Rep
Cr			1	100.114	ug/l	1.66	2,064,361.13	6.542E+00	Pulse	0.50	3
As			1	100.621	ug/l	0.57	209,316.57	6.633E-01	Pulse	1.00	3
Mo			1	98.838	ug/l	1.37	1,487,148.50	3.063E+00	Pulse	0.50	3
Pb			1	98.421	ug/l	0.56	8,968,916.33	8.321E-01	Analog	1.00	3
Be			1	98.852	ug/l	1.16	13,315.18	3.433E-02	Pulse	2.00	3
Ag			1	97.918	ug/l	1.15	5,700,329.83	1.174E+01	Pulse	0.50	3
Ba			1	98.867	ug/l	0.39	501,253.37	1.519E-01	Pulse	0.50	3
Tl			1	98.960	ug/l	0.39	13,482,187.67	1.251E+00	Analog	0.50	3
Sn			1	99.256	ug/l	0.26	1,222,453.11	3.706E-01	Pulse	0.30	3
Sr			1	98.349	ug/l	0.48	980,432.50	2.972E-01	Pulse	0.50	3
[Pb]			1	97.658	ug/l	0.87	4,151,335.75	3.851E-01	Pulse	0.50	3
Ca			1	9766.713	ug/l	1.19	425,652.15	1.097E+00	Pulse	0.50	3
Ti			1	99.446	ug/l	0.37	35,702.43	9.203E-02	Pulse	0.50	3
Na			1	9827.460	ug/l	0.79	23,290,943.33	6.004E+01	Analog	1.00	3
Mg			1	9841.865	ug/l	1.32	10,055,103.67	2.592E+01	Analog	1.00	3
K			1	9826.200	ug/l	1.15	7,493,846.50	1.932E+01	Analog	1.00	3
V			1	98.317	ug/l	0.97	1,492,472.09	3.847E+00	Pulse	0.50	3
Mn			1	100.351	ug/l	1.52	894,714.25	2.835E+00	Pulse	0.50	3
Fe			1	10084.345	ug/l	1.10	164,095,349.33	5.200E+02	Analog	0.50	3
Co			1	99.143	ug/l	1.12	3,876,633.92	1.228E+01	Pulse	0.50	3
Ni			1	101.468	ug/l	1.14	1,087,162.83	3.445E+00	Pulse	0.50	3
Cu			1	101.481	ug/l	1.36	3,045,600.75	9.651E+00	Pulse	0.50	3
Zn			1	101.953	ug/l	1.57	364,945.91	7.516E-01	Pulse	1.00	3
Cd			1	100.309	ug/l	0.76	684,844.94	1.410E+00	Pulse	0.50	3
Al			1	9794.172	ug/l	0.94	2,732,019.42	7.043E+00	Pulse	1.00	3
Se			1	95.747	ug/l	2.27	14,002.34	5.239E-01	Pulse	3.00	3
Sb			1	99.344	ug/l	1.01	1,321,091.25	2.721E+00	Pulse	1.00	3
Se			1	95.590	ug/l	3.20	7,089.54	2.653E-01	Pulse	3.00	3

ISTD Table

Tune	Element	Mass	CPS	RSD(%)	ISTD Recovery%	Det	Time(sec)	Rep
1	Bi		10,779,030.67	0.49	92.2	Analog	0.50	3
1	Sc		387,936.86	1.03	92.8	Pulse	0.30	3
1	Ge		315,587.12	1.14	90.6	Pulse	0.30	3
1	In		3,298,795.01	0.24	91.9	Pulse	0.30	3
1	Tb		14,784,565.67	0.80	95.7	Analog	0.50	3
1	Lu		8,730,460.33	0.67	96.5	Analog	0.50	3

Quantitation Report

Tune	Element	Mass	CPS	RSD(%)	ISTD Recovery%	Det	Time(sec)	Rep
1	Ge		485,570.72	0.88	91.3	Pulse	0.30	3
1	Te		26,735.52	2.02	87.9	Pulse	0.50	3
1	Li		2,767.98	4.53	81.9	Pulse	0.30	3

Quantitation Report

File Name 011HSTD.d
File Path D:\2018\05-May\x\050718m1.b
Method File
Method Path
Acq Time 5/7/2018 10:44
Sample Name HSTD
Sample Type HSTD
Comment =std 6
Prep Dilution 1.000
Auto Dilution N/A
Total Dilution 1.000
Operator Name admin
Acq Mode Spectrum
Cal Title
Cal Type External Calibration
Last Calib 5/7/2018 10:39
Bkg File
Bkg Mode Count Subtraction except for ISTD
Interference File
FQ Blank File
VIS Fit Point to Point

Tune Step **Tune File**
 1

FullQuant Table

Element	Mass	ISTD	Tune	Conc	Units	RSD(%)	CPS	Ratio	Det	Time(sec)	Rep
Cr			1	201.145	ug/l	1.02	4,107,661.83	1.314E+01	Pulse	0.50	3
As			1	200.944	ug/l	1.01	414,032.13	1.325E+00	Pulse	1.00	3
Mo			1	199.867	ug/l	0.39	2,962,735.75	6.194E+00	Pulse	0.50	3
Pb			1	199.427	ug/l	0.31	17,436,189.33	1.686E+00	Analog	1.00	3
Be			1	195.997	ug/l	0.57	26,264.22	6.806E-02	Pulse	2.00	3
Ag			1	139.616	ug/l	0.61	8,007,192.67	1.674E+01	Analog	0.50	3
Ba			1	201.937	ug/l	0.52	1,001,422.46	3.103E-01	Pulse	0.50	3
Tl			1	200.784	ug/l	0.49	26,249,551.33	2.538E+00	Analog	0.50	3
Sn			1	200.794	ug/l	1.15	2,417,986.22	7.494E-01	Pulse	0.30	3
Sr			1	201.530	ug/l	0.54	1,963,909.75	6.086E-01	Pulse	0.50	3
[Pb]			1	199.933	ug/l	1.10	8,154,016.67	7.883E-01	Analog	0.50	3
Ca			1	19869.777	ug/l	0.18	861,329.08	2.232E+00	Pulse	0.50	3
Ti			1	199.772	ug/l	1.18	71,345.16	1.849E-01	Pulse	0.50	3
Na			1	20027.879	ug/l	0.03	47,210,764.00	1.223E+02	Analog	1.00	3
Mg			1	19970.246	ug/l	0.19	20,297,956.67	5.260E+01	Analog	1.00	3
K			1	20123.506	ug/l	0.25	15,255,548.33	3.953E+01	Analog	1.00	3
V			1	199.669	ug/l	0.11	3,014,771.42	7.812E+00	Pulse	0.50	3
Mn			1	200.309	ug/l	1.40	1,767,753.42	5.655E+00	Pulse	0.50	3
Fe			1	20286.274	ug/l	0.98	326,955,584.00	1.046E+03	Analog	0.50	3
Co			1	202.720	ug/l	0.88	7,852,025.50	2.512E+01	Analog	0.50	3
Ni			1	200.882	ug/l	0.53	2,130,964.42	6.817E+00	Pulse	0.50	3
Cu			1	199.714	ug/l	0.70	5,922,411.67	1.895E+01	Analog	0.50	3
Zn			1	199.230	ug/l	0.78	700,648.81	1.465E+00	Pulse	1.00	3
Cd			1	198.574	ug/l	0.28	1,335,649.29	2.792E+00	Pulse	0.50	3
Al			1	20076.691	ug/l	0.46	5,570,961.17	1.444E+01	Analog	1.00	3
Se			1	202.530	ug/l	1.37	27,448.18	1.107E+00	Pulse	3.00	3
Sb			1	200.475	ug/l	0.37	2,626,274.67	5.490E+00	Pulse	1.00	3
Se			1	200.087	ug/l	0.94	13,734.28	5.540E-01	Pulse	3.00	3

ISTD Table

Tune	Element	Mass	CPS	RSD(%)	ISTD Recovery%	Det	Time(sec)	Rep
1	Bi		10,343,537.33	0.38	88.4	Analog	0.50	3
1	Sc		385,915.10	0.56	92.3	Pulse	0.30	3
1	Ge		312,616.77	1.38	89.8	Pulse	0.30	3
1	In		3,226,845.91	1.01	89.9	Pulse	0.30	3
1	Tb		14,577,279.67	0.69	94.4	Analog	0.50	3
1	Lu		8,696,079.67	1.22	96.1	Analog	0.50	3

Quantitation Report

Tune	Element	Mass	CPS	RSD(%)	ISTD Recovery%	Det	Time(sec)	Rep
1	Ge		478,359.04	0.88	89.9	Pulse	0.30	3
1	Te		24,790.76	1.05	81.5	Pulse	0.50	3
1	Li		2,891.34	2.68	85.6	Pulse	0.30	3

Quantitation Report

File Name 012_ICV.d
File Path D:\2018\05-May\x\050718m1.b
Method File
Method Path
Acq Time 5/7/2018 10:48
Sample Name ICV
Sample Type ICV
Comment
Prep Dilution 1.000
Auto Dilution N/A
Total Dilution 1.000
Operator Name admin
Acq Mode Spectrum
Cal Title
Cal Type External Calibration
Last Calib 5/7/2018 10:39
Bkg File
Bkg Mode Count Subtraction except for ISTD
Interference File
FQ Blank File
VIS Fit Point to Point

Tune Step **Tune File**
 1

FullQuant Table

Element	Mass	ISTD	Tune	Conc	Units	RSD(%)	CPS	Ratio	Det	Time(sec)	Rep
Cr			1	102.937	ug/l	0.44	2,117,094.42	6.727E+00	Pulse	0.50	3
As			1	103.619	ug/l	0.47	214,979.38	6.830E-01	Pulse	1.00	3
Mo			1	103.202	ug/l	0.22	1,544,658.29	3.198E+00	Pulse	0.50	3
Pb			1	99.511	ug/l	0.82	9,029,240.00	8.413E-01	Analog	1.00	3
Be			1	99.291	ug/l	2.06	13,197.77	3.448E-02	Pulse	2.00	3
Ag			1	49.280	ug/l	0.30	2,853,762.50	5.909E+00	Pulse	0.50	3
Ba			1	103.522	ug/l	0.93	518,019.73	1.591E-01	Pulse	0.50	3
Tl			1	98.840	ug/l	0.34	13,408,250.00	1.249E+00	Analog	0.50	3
Sn			1	107.863	ug/l	1.04	1,311,111.58	4.027E-01	Pulse	0.30	3
Sr			1	100.481	ug/l	0.60	988,651.90	3.036E-01	Pulse	0.50	3
[Pb]			1	98.795	ug/l	0.67	4,181,644.83	3.896E-01	Pulse	0.50	3
Ca			1	10030.439	ug/l	1.13	431,400.34	1.127E+00	Pulse	0.50	3
Ti			1	104.927	ug/l	1.87	37,171.19	9.710E-02	Pulse	0.50	3
Na			1	9924.526	ug/l	1.35	23,210,867.33	6.063E+01	Analog	1.00	3
Mg			1	10299.691	ug/l	1.18	10,384,691.33	2.713E+01	Analog	1.00	3
K			1	9928.743	ug/l	1.24	7,472,395.00	1.952E+01	Analog	1.00	3
V			1	104.064	ug/l	1.61	1,558,835.00	4.072E+00	Pulse	0.50	3
Mn			1	98.699	ug/l	0.98	877,733.23	2.789E+00	Pulse	0.50	3
Fe			1	10093.338	ug/l	0.97	163,809,898.67	5.205E+02	Analog	0.50	3
Co			1	101.129	ug/l	0.89	3,943,937.33	1.253E+01	Pulse	0.50	3
Ni			1	101.629	ug/l	0.94	1,086,025.63	3.451E+00	Pulse	0.50	3
Cu			1	103.397	ug/l	0.76	3,094,724.25	9.833E+00	Pulse	0.50	3
Zn			1	103.213	ug/l	0.67	367,487.84	7.609E-01	Pulse	1.00	3
Cd			1	101.356	ug/l	1.37	688,320.73	1.425E+00	Pulse	0.50	3
Al			1	9924.291	ug/l	1.14	2,731,914.33	7.136E+00	Pulse	1.00	3
Se			1	103.464	ug/l	1.20	14,627.14	5.660E-01	Pulse	3.00	3
Sb			1	103.189	ug/l	0.66	1,364,965.79	2.826E+00	Pulse	1.00	3
Se			1	103.409	ug/l	1.47	7,413.55	2.869E-01	Pulse	3.00	3

ISTD Table

Tune	Element	Mass	CPS	RSD(%)	ISTD Recovery%	Det	Time(sec)	Rep
1	Bi		10,732,769.67	0.38	91.8	Analog	0.50	3
1	Sc		382,852.23	1.44	91.5	Pulse	0.30	3
1	Ge		314,743.75	0.60	90.4	Pulse	0.30	3
1	In		3,256,053.90	0.92	90.7	Pulse	0.30	3
1	Tb		14,849,430.67	0.51	96.1	Analog	0.50	3
1	Lu		8,773,493.33	0.28	96.9	Analog	0.50	3

Quantitation Report

Tune	Element	Mass	CPS	RSD(%)	ISTD Recovery%	Det	Time(sec)	Rep
1	Ge		482,988.12	0.61	90.8	Pulse	0.30	3
1	Te		25,842.94	0.82	85.0	Pulse	0.50	3
1	Li		2,851.33	3.72	84.4	Pulse	0.30	3

Quantitation Report

File Name 013_ICB.d
File Path D:\2018\05-May\x050718m1.b
Method File
Method Path
Acq Time 5/7/2018 10:51
Sample Name ICB
Sample Type ICB
Comment
Prep Dilution 1.000
Auto Dilution N/A
Total Dilution 1.000
Operator Name admin
Acq Mode Spectrum
Cal Title
Cal Type External Calibration
Last Calib 5/7/2018 10:39
Bkg File
Bkg Mode Count Subtraction except for ISTD
Interference File
FQ Blank File
VIS Fit Point to Point

Tune Step 1 **Tune File**

FullQuant Table

Element	Mass	ISTD	Tune	Conc	Units	RSD(%)	CPS	Ratio	Det	Time(sec)	Rep
Cr			1	-0.014	ug/l	-6.21	871.36	2.683E-03	Pulse	0.50	3
As			1	0.008	ug/l	31.03	37.67	1.161E-04	Pulse	1.00	3
Mo			1	0.027	ug/l	13.98	428.68	8.625E-04	Pulse	0.50	3
Pb			1	0.007	ug/l	28.27	4,010.48	3.503E-04	Pulse	1.00	3
Be			1	0.009	ug/l	24.48	1.33	3.506E-06	Pulse	2.00	3
Ag			1	0.008	ug/l	10.36	530.01	1.066E-03	Pulse	0.50	3
Ba			1	0.004	ug/l	36.04	44.67	1.326E-05	Pulse	0.50	3
Tl			1	0.031	ug/l	12.61	4,676.66	4.087E-04	Pulse	0.50	3
Sn			1	0.057	ug/l	5.78	1,650.10	4.896E-04	Pulse	0.30	3
Sr			1	-0.002	ug/l	-322.94	1,229.38	3.648E-04	Pulse	0.50	3
[Pb]			1	0.007	ug/l	18.59	1,889.45	1.650E-04	Pulse	0.50	3
Ca			1	-1.408	ug/l	-25.30	117.33	3.085E-04	Pulse	0.50	3
Ti			1	0.010	ug/l	146.42	4.67	1.226E-05	Pulse	0.50	3
Na			1	0.673	ug/l	26.49	11,225.48	2.951E-02	Pulse	1.00	3
Mg			1	0.280	ug/l	50.01	612.35	1.610E-03	Pulse	1.00	3
K			1	-0.408	ug/l	-8.84	11,468.67	3.015E-02	Pulse	1.00	3
V			1	-0.014	ug/l	-36.89	426.01	1.120E-03	Pulse	0.50	3
Mn			1	-0.128	ug/l	-1.14	240.67	7.411E-04	Pulse	0.50	3
Fe			1	0.339	ug/l	40.78	45,944.87	1.415E-01	Pulse	0.50	3
Co			1	0.004	ug/l	34.42	224.67	6.920E-04	Pulse	0.50	3
Ni			1	-0.065	ug/l	-0.60	518.01	1.595E-03	Pulse	0.50	3
Cu			1	-0.013	ug/l	-81.22	15,859.20	4.883E-02	Pulse	0.50	3
Zn			1	-0.205	ug/l	-5.05	1,384.38	2.785E-03	Pulse	1.00	3
Cd			1	0.005	ug/l	7.98	37.33	7.505E-05	Pulse	0.50	3
Al			1	0.170	ug/l	40.82	427.34	1.124E-03	Pulse	1.00	3
Se			1	0.011	ug/l	122.41	23.33	8.061E-04	Pulse	3.00	3
Sb			1	0.021	ug/l	14.57	467.34	9.397E-04	Pulse	1.00	3
Se			1	-0.055	ug/l	-108.97	28.78	9.929E-04	Pulse	3.00	3

ISTD Table

Tune	Element	Mass	CPS	RSD(%)	ISTD Recovery%	Det	Time(sec)	Rep
1	Bi		11,447,340.00	0.45	97.9	Analog	0.50	3
1	Sc		380,338.22	0.11	90.9	Pulse	0.30	3

Quantitation Report

1	Ge		324,764.26	0.88	93.3	Pulse	0.30	3
1	In		3,370,476.11	0.32	93.9	Pulse	0.30	3
1	Tb		15,041,928.33	0.59	97.4	Analog	0.50	3
1	Lu		8,809,932.67	0.20	97.3	Analog	0.50	3
1	Ge		497,202.24	1.03	93.5	Pulse	0.30	3
1	Te		28,966.94	1.22	95.3	Pulse	0.50	3
1	Li		2,963.57	2.27	87.7	Pulse	0.30	3

Quantitation Report

File Name 014LCCV.d
File Path D:\2018\05-May\x\050718m1.b
Method File
Method Path
Acq Time 5/7/2018 10:55
Sample Name CRIA
Sample Type CRIA
Comment =std 2
Prep Dilution 1.000
Auto Dilution N/A
Total Dilution 1.000
Operator Name admin
Acq Mode Spectrum
Cal Title
Cal Type External Calibration
Last Calib 5/7/2018 10:39
Bkg File
Bkg Mode Count Subtraction except for ISTD
Interference File
FQ Blank File
VIS Fit Point to Point

Tune Step **Tune File**
 1

FullQuant Table

Element	Mass	ISTD	Tune	Conc	Units	RSD(%)	CPS	Ratio	Det	Time(sec)	Rep
Cr			1	0.979	ug/l	2.44	22,181.30	6.755E-02	Pulse	0.50	3
As			1	1.010	ug/l	2.38	2,207.13	6.721E-03	Pulse	1.00	3
Mo			1	0.976	ug/l	1.30	15,231.53	3.029E-02	Pulse	0.50	3
Pb			1	0.994	ug/l	0.52	100,869.85	8.687E-03	Pulse	1.00	3
Be			1	9.358	ug/l	153.71	1,267.27	3.250E-03	Pulse	2.00	3
Ag			1	1.033	ug/l	0.67	62,343.40	1.240E-01	Pulse	0.50	3
Ba			1	0.987	ug/l	2.55	5,230.77	1.523E-03	Pulse	0.50	3
Tl			1	0.981	ug/l	1.04	144,144.56	1.241E-02	Pulse	0.50	3
Sn			1	1.206	ug/l	4.38	16,394.04	4.775E-03	Pulse	0.30	3
Sr			1	0.968	ug/l	2.50	11,304.75	3.292E-03	Pulse	0.50	3
[Pb]			1	1.010	ug/l	1.38	47,854.03	4.122E-03	Pulse	0.50	3
Ca			1	183.901	ug/l	74.06	8,264.55	2.112E-02	Pulse	0.50	3
Ti			1	1.024	ug/l	5.78	373.34	9.508E-04	Pulse	0.50	3
Na			1	101.692	ug/l	1.59	253,745.75	6.464E-01	Pulse	1.00	3
Mg			1	101.514	ug/l	0.46	105,295.32	2.682E-01	Pulse	1.00	3
K			1	99.895	ug/l	0.90	89,123.52	2.270E-01	Pulse	1.00	3
V			1	0.971	ug/l	3.68	15,557.57	3.963E-02	Pulse	0.50	3
Mn			1	0.896	ug/l	3.70	9,727.79	2.963E-02	Pulse	0.50	3
Fe			1	100.166	ug/l	1.18	1,736,450.67	5.288E+00	Pulse	0.50	3
Co			1	1.017	ug/l	1.06	41,453.56	1.262E-01	Pulse	0.50	3
Ni			1	1.002	ug/l	0.50	12,408.67	3.779E-02	Pulse	0.50	3
Cu			1	0.987	ug/l	0.90	47,113.90	1.435E-01	Pulse	0.50	3
Zn			1	1.507	ug/l	1.50	7,710.22	1.533E-02	Pulse	1.00	3
Cd			1	1.060	ug/l	1.91	7,497.55	1.491E-02	Pulse	0.50	3
Al			1	101.149	ug/l	1.30	28,942.45	7.373E-02	Pulse	1.00	3
Se			1	0.903	ug/l	4.46	166.11	5.678E-03	Pulse	3.00	3
Sb			1	1.010	ug/l	0.47	14,087.40	2.802E-02	Pulse	1.00	3
Se			1	0.803	ug/l	8.68	98.33	3.363E-03	Pulse	3.00	3

ISTD Table

Tune Element	Mass	CPS	RSD(%)	ISTD Recovery%	Det	Time(sec)	Rep
1 Bi		11,611,149.33	0.64	99.3	Analog	0.50	3

Quantitation Report

Tune	Element	Mass	CPS	RSD(%)	ISTD Recovery%	Det	Time(sec)	Rep
1	Sc		392,558.90	0.70	93.9	Pulse	0.30	3
1	Ge		328,388.22	1.00	94.3	Pulse	0.30	3
1	In		3,433,895.91	0.41	95.6	Pulse	0.30	3
1	Tb		15,263,797.67	1.03	98.8	Analog	0.50	3
1	Lu		8,840,590.67	0.08	97.7	Analog	0.50	3
1	Ge		502,799.44	0.88	94.5	Pulse	0.30	3
1	Te		29,247.33	1.29	96.2	Pulse	0.50	3
1	Li		3,008.02	3.04	89.0	Pulse	0.30	3

Quantitation Report

File Name 015ICSA.d
File Path D:\2018\05-May\x\050718m1.b
Method File
Method Path
Acq Time 5/7/2018 10:59
Sample Name ICSA
Sample Type ICSA
Comment
Prep Dilution 1.000
Auto Dilution N/A
Total Dilution 1.000
Operator Name admin
Acq Mode Spectrum
Cal Title
Cal Type External Calibration
Last Calib 5/7/2018 10:39
Bkg File
Bkg Mode Count Subtraction except for ISTD
Interference File
FQ Blank File
VIS Fit Point to Point

Tune Step	Tune File
1	

FullQuant Table

Element	Mass	ISTD	Tune	Conc	Units	RSD(%)	CPS	Ratio	Det	Time(sec)	Rep
Cr			1	1.298	ug/l	0.86	26,448.57	8.838E-02	Pulse	0.50	3
As			1	0.084	ug/l	9.24	185.67	6.205E-04	Pulse	1.00	3
Mo			1	2062.056	ug/l	1.34	28,455,256.67	6.390E+01	Analog	0.50	3
Pb			1	0.117	ug/l	0.44	11,358.78	1.281E-03	Pulse	1.00	3
Be			1	0.017	ug/l	74.03	2.50	6.439E-06	Pulse	2.00	3
Ag			1	0.037	ug/l	2.56	2,048.12	4.599E-03	Pulse	0.50	3
Ba			1	0.090	ug/l	15.59	437.34	1.449E-04	Pulse	0.50	3
Tl			1	0.011	ug/l	14.38	1,339.39	1.510E-04	Pulse	0.50	3
Sn			1	0.105	ug/l	0.92	2,019.01	6.690E-04	Pulse	0.30	3
Sr			1	0.985	ug/l	3.81	10,092.06	3.344E-03	Pulse	0.50	3
[Pb]			1	0.118	ug/l	5.65	5,372.86	6.061E-04	Pulse	0.50	3
Ca			1	94902.257	ug/l	0.44	4,141,969.92	1.066E+01	Pulse	0.50	3
Tl			1	2018.657	ug/l	0.81	725,941.31	1.868E+00	Pulse	0.50	3
Na			1	99419.597	ug/l	0.50	235,954,122.67	6.072E+02	Analog	1.00	3
Mg			1	98886.990	ug/l	0.74	101,211,248.00	2.604E+02	Analog	1.00	3
K			1	102653.126	ug/l	1.37	78,311,549.33	2.015E+02	Analog	1.00	3
V			1	0.003	ug/l	74.44	684.01	1.760E-03	Pulse	0.50	3
Mn			1	0.196	ug/l	11.45	2,956.24	9.878E-03	Pulse	0.50	3
Fe			1	101188.851	ug/l	0.58	1,561,155,626.67	5.217E+03	Analog	0.50	3
Co			1	0.015	ug/l	2.93	601.34	2.010E-03	Pulse	0.50	3
Ni			1	0.071	ug/l	4.77	1,865.43	6.233E-03	Pulse	0.50	3
Cu			1	0.062	ug/l	12.99	16,741.26	5.594E-02	Pulse	0.50	3
Zn			1	1.105	ug/l	0.50	5,513.79	1.238E-02	Pulse	1.00	3
Cd			1	0.388	ug/l	7.52	2,430.17	5.458E-03	Pulse	0.50	3
Al			1	97569.347	ug/l	1.19	27,260,750.00	7.015E+01	Analog	1.00	3
Se			1	0.089	ug/l	24.83	27.45	1.230E-03	Pulse	3.00	3
Sb			1	0.059	ug/l	2.88	872.02	1.958E-03	Pulse	1.00	3
Se			1	0.258	ug/l	160.82	41.56	1.859E-03	Pulse	3.00	3

ISTD Table

Tune	Element	Mass	CPS	RSD(%)	ISTD Recovery%	Det	Time(sec)	Rep
1	Bi		8,865,436.33	0.46	75.8	Analog	0.50	3
1	Sc		388,620.16	0.88	92.9	Pulse	0.30	3
1	Ge		299,255.37	0.23	86.0	Pulse	0.30	3
1	In		3,018,173.77	0.14	84.1	Pulse	0.30	3
1	Tb		13,637,890.33	0.60	88.3	Analog	0.50	3
1	Lu		8,166,596.83	0.08	90.2	Analog	0.50	3
1	Ge		445,326.15	0.62	83.7	Pulse	0.30	3

Quantitation Report

Tune	Element	Mass	CPS	RSD(%)	ISTD Recovery%	Det	Time(sec)	Rep
1	Te		22,314.93	0.99	73.4	Pulse	0.50	3
1	Li		2,465.72	3.99	73.0	Pulse	0.30	3

Quantitation Report

File Name 016ICSB.d
File Path D:\2018\05-May\x050718m1.b
Method File
Method Path
Acq Time 5/7/2018 11:02
Sample Name ICSAB
Sample Type ICSAB
Comment
Prep Dilution 1.000
Auto Dilution N/A
Total Dilution 1.000
Operator Name admin
Acq Mode Spectrum
Cal Title
Cal Type External Calibration
Last Calib 5/7/2018 10:39
Bkg File
Bkg Mode Count Subtraction except for ISTD
Interference File
FQ Blank File
VIS Fit Point to Point

Tune Step **Tune File**
1

FullQuant Table

Element	Mass	ISTD	Tune	Conc	Units	RSD(%)	CPS	Ratio	Det	Time(sec)	Rep	
Cr			1	21.265	ug/l	0.80	413,088.88	1.392E+00	Pulse	0.50	3	
As			1	19.519	ug/l	1.14	38,181.92	1.287E-01	Pulse	1.00	3	
Mo			1	2057.712	ug/l	0.69	28,351,820.67	6.377E+01	Analog	0.50	3	
Pb			1	0.131	ug/l	1.15	12,394.82	1.393E-03	Pulse	1.00	3	
Be			1	0.008	ug/l	158.04		1.17	3.075E-06	Pulse	2.00	3
Ag			1	17.181	ug/l	0.40	915,952.40	2.060E+00	Pulse	0.50	3	
Ba			1	0.080	ug/l	6.96	390.68	1.298E-04	Pulse	0.50	3	
Tl			1	0.008	ug/l	18.40	991.37	1.115E-04	Pulse	0.50	3	
Sn			1	0.081	ug/l	7.35	1,738.99	5.778E-04	Pulse	0.30	3	
Sr			1	1.001	ug/l	0.93	10,206.12	3.391E-03	Pulse	0.50	3	
[Pb]			1	0.131	ug/l	3.96	5,831.01	6.554E-04	Pulse	0.50	3	
Ca			1	95026.527	ug/l	1.00	4,053,664.92	1.067E+01	Pulse	0.50	3	
Tl			1	2029.914	ug/l	0.89	713,500.81	1.878E+00	Pulse	0.50	3	
Na			1	100360.456	ug/l	0.61	232,806,618.67	6.129E+02	Analog	1.00	3	
Mg			1	99581.735	ug/l	1.15	99,618,242.67	2.623E+02	Analog	1.00	3	
K			1	103748.591	ug/l	1.40	77,361,946.67	2.037E+02	Analog	1.00	3	
V			1	0.005	ug/l	79.18	697.35	1.836E-03	Pulse	0.50	3	
Mn			1	20.176	ug/l	0.18	170,141.50	5.735E-01	Pulse	0.50	3	
Fe			1	101682.522	ug/l	0.88	1,555,108,778.67	5.242E+03	Analog	0.50	3	
Co			1	19.338	ug/l	0.86	710,853.12	2.396E+00	Pulse	0.50	3	
Ni			1	18.723	ug/l	0.84	189,508.59	6.388E-01	Pulse	0.50	3	
Cu			1	18.385	ug/l	0.53	530,871.33	1.790E+00	Pulse	0.50	3	
Zn			1	19.567	ug/l	0.65	65,679.80	1.477E-01	Pulse	1.00	3	
Cd			1	18.446	ug/l	0.88	115,317.03	2.594E-01	Pulse	0.50	3	
Al			1	98087.561	ug/l	1.07	26,787,243.33	7.052E+01	Analog	1.00	3	
Se			1	0.046	ug/l	2.03		21.56	9.946E-04	Pulse	3.00	3
Sb			1	0.051	ug/l	3.37	780.35	1.755E-03	Pulse	1.00	3	
Se			1	-0.025	ug/l	-134.76		23.33	1.076E-03	Pulse	3.00	3

ISTD Table

Tune	Element	Mass	CPS	RSD(%)	ISTD Recovery%	Det	Time(sec)	Rep
1	Bi		8,898,147.00	0.58	76.1	Analog	0.50	3
1	Sc		379,834.44	0.29	90.8	Pulse	0.30	3
1	Ge		296,654.12	0.84	85.2	Pulse	0.30	3
1	In		3,009,968.35	0.68	83.8	Pulse	0.30	3
1	Tb		13,702,696.00	0.75	88.7	Analog	0.50	3
1	Lu		8,151,725.83	0.67	90.1	Analog	0.50	3
1	Ge		444,621.70	0.43	83.6	Pulse	0.30	3

Quantitation Report

Tune	Element	Mass	CPS	RSD(%)	ISTD Recovery%	Det	Time(sec)	Rep
1	Te		21,674.19	2.82	71.3	Pulse	0.50	3
1	Li		2,266.81	7.01	67.1	Pulse	0.30	3

Quantitation Report

File Name 017CCVA.d
File Path D:\2018\05-May\x050718m1.b
Method File
Method Path
Acq Time 5/7/2018 11:06
Sample Name CCV (Ag)
Sample Type CCV_Ag
Comment =std 4
Prep Dilution 1.000
Auto Dilution N/A
Total Dilution 1.000
Operator Name admin
Acq Mode Spectrum
Cal Title
Cal Type External Calibration
Last Calib 5/7/2018 10:39
Bkg File
Bkg Mode Count Subtraction except for ISTD
Interference File
FQ Blank File
VIS Fit Point to Point

Tune Step 1 **Tune File**

FullQuant Table

Element	Mass	ISTD	Tune	Conc	Units	RSD(%)	CPS	Ratio	Det	Time(sec)	Rep
Cr			1	48.866	ug/l	1.99	992,547.33	3.195E+00	Pulse	0.50	3
As			1	50.161	ug/l	1.48	102,729.71	3.307E-01	Pulse	1.00	3
Mo			1	49.449	ug/l	1.15	729,774.64	1.532E+00	Pulse	0.50	3
Pb			1	47.828	ug/l	0.39	4,468,402.17	4.045E-01	Pulse	1.00	3
Be			1	48.307	ug/l	0.63	6,132.26	1.677E-02	Pulse	2.00	3
Ag			1	50.737	ug/l	1.01	2,897,093.33	6.083E+00	Pulse	0.50	3
Ba			1	49.799	ug/l	0.44	248,033.35	7.654E-02	Pulse	0.50	3
Tl			1	48.885	ug/l	1.03	6,825,487.17	6.179E-01	Analog	0.50	3
Sn			1	49.705	ug/l	1.39	601,836.76	1.857E-01	Pulse	0.30	3
Sr			1	48.498	ug/l	0.55	475,556.70	1.467E-01	Pulse	0.50	3
[Pb]			1	48.093	ug/l	0.59	2,095,909.91	1.897E-01	Pulse	0.50	3
Ca			1	4924.436	ug/l	0.95	202,331.16	5.535E-01	Pulse	0.50	3
Tl			1	50.032	ug/l	0.67	16,926.67	4.630E-02	Pulse	0.50	3
Na			1	4925.272	ug/l	1.11	11,004,304.33	3.010E+01	Analog	1.00	3
Mg			1	4960.074	ug/l	0.72	4,775,749.33	1.306E+01	Analog	1.00	3
K			1	4907.509	ug/l	0.62	3,532,675.67	9.664E+00	Pulse	1.00	3
V			1	49.736	ug/l	1.00	711,762.48	1.947E+00	Pulse	0.50	3
Mn			1	48.669	ug/l	1.90	427,877.97	1.377E+00	Pulse	0.50	3
Fe			1	4970.402	ug/l	1.67	79,641,965.33	2.564E+02	Analog	0.50	3
Co			1	49.300	ug/l	1.48	1,897,786.33	6.109E+00	Pulse	0.50	3
Ni			1	50.564	ug/l	0.70	533,980.17	1.719E+00	Pulse	0.50	3
Cu			1	50.968	ug/l	0.57	1,513,743.08	4.872E+00	Pulse	0.50	3
Zn			1	51.434	ug/l	1.23	181,598.23	3.813E-01	Pulse	1.00	3
Cd			1	51.527	ug/l	0.69	345,048.87	7.245E-01	Pulse	0.50	3
Al			1	4784.806	ug/l	0.90	1,257,933.92	3.441E+00	Pulse	1.00	3
Se			1	46.486	ug/l	1.10	6,853.12	2.547E-01	Pulse	3.00	3
Sb			1	50.295	ug/l	0.71	656,111.86	1.378E+00	Pulse	1.00	3
Se			1	47.384	ug/l	0.72	3,553.33	1.321E-01	Pulse	3.00	3

ISTD Table

Tune	Element	Mass	CPS	RSD(%)	ISTD Recovery%	Det	Time(sec)	Rep
1	Bi		11,046,791.33	0.40	94.5	Analog	0.50	3
1	Sc		365,572.23	1.12	87.4	Pulse	0.30	3
1	Ge		310,692.74	1.16	89.2	Pulse	0.30	3

Quantitation Report

Tune	Element	Mass	CPS	RSD(%)	ISTD Recovery%	Det	Time(sec)	Rep
1	In		3,240,632.58	0.14	90.3	Pulse	0.30	3
1	Tb		14,931,792.67	0.78	96.7	Analog	0.50	3
1	Lu		8,769,391.00	0.63	96.9	Analog	0.50	3
1	Ge		476,258.38	0.75	89.5	Pulse	0.30	3
1	Te		26,903.12	0.59	88.5	Pulse	0.50	3
1	Li		2,495.72	2.18	73.9	Pulse	0.30	3

Quantitation Report

File Name 018_CCV.d
File Path D:\2018\05-May\x\050718m1.b
Method File
Method Path
Acq Time 5/7/2018 11:10
Sample Name CCV
Sample Type CCV
Comment =std 5
Prep Dilution 1.000
Auto Dilution N/A
Total Dilution 1.000
Operator Name admin
Acq Mode Spectrum
Cal Title
Cal Type External Calibration
Last Calib 5/7/2018 10:39
Bkg File
Bkg Mode Count Subtraction except for ISTD
Interference File
FQ Blank File
VIS Fit Point to Point

Tune Step **Tune File**
 1

FullQuant Table

Element	Mass	ISTD	Tune	Conc	Units	RSD(%)	CPS	Ratio	Det	Time(sec)	Rep
Cr			1	98.585	ug/l	0.59	1,991,641.75	6.442E+00	Pulse	0.50	3
As			1	101.021	ug/l	0.48	205,869.62	6.659E-01	Pulse	1.00	3
Mo			1	99.820	ug/l	0.83	1,467,874.71	3.093E+00	Pulse	0.50	3
Pb			1	98.671	ug/l	0.11	8,960,020.33	8.342E-01	Analog	1.00	3
Be			1	97.652	ug/l	0.94	12,567.21	3.391E-02	Pulse	2.00	3
Ag			1	98.929	ug/l	0.99	5,628,386.83	1.186E+01	Pulse	0.50	3
Ba			1	100.061	ug/l	0.47	493,353.45	1.538E-01	Pulse	0.50	3
Tl			1	99.109	ug/l	0.59	13,454,772.67	1.253E+00	Analog	0.50	3
Sn			1	100.498	ug/l	0.60	1,203,712.21	3.752E-01	Pulse	0.30	3
Sr			1	98.835	ug/l	0.22	958,174.77	2.987E-01	Pulse	0.50	3
[Pb]			1	96.742	ug/l	0.48	4,097,859.00	3.815E-01	Pulse	0.50	3
Ca			1	9808.444	ug/l	1.56	408,383.14	1.102E+00	Pulse	0.50	3
Ti			1	100.264	ug/l	0.26	34,390.09	9.279E-02	Pulse	0.50	3
Na			1	9909.359	ug/l	1.45	22,435,824.00	6.054E+01	Analog	1.00	3
Mg			1	9871.468	ug/l	1.15	9,635,422.67	2.600E+01	Analog	1.00	3
K			1	9974.037	ug/l	1.24	7,266,946.50	1.961E+01	Analog	1.00	3
V			1	99.947	ug/l	1.89	1,449,379.87	3.911E+00	Pulse	0.50	3
Mn			1	98.314	ug/l	0.58	858,796.73	2.778E+00	Pulse	0.50	3
Fe			1	10049.743	ug/l	0.77	160,210,672.00	5.182E+02	Analog	0.50	3
Co			1	98.274	ug/l	0.51	3,764,638.58	1.218E+01	Pulse	0.50	3
Ni			1	100.494	ug/l	0.99	1,054,857.33	3.412E+00	Pulse	0.50	3
Cu			1	100.503	ug/l	0.87	2,955,166.25	9.559E+00	Pulse	0.50	3
Zn			1	101.281	ug/l	0.45	354,344.37	7.467E-01	Pulse	1.00	3
Cd			1	101.359	ug/l	0.37	676,304.23	1.425E+00	Pulse	0.50	3
Al			1	9669.332	ug/l	0.73	2,576,905.67	6.953E+00	Pulse	1.00	3
Se			1	96.634	ug/l	0.28	13,632.96	5.287E-01	Pulse	3.00	3
Sb			1	99.952	ug/l	1.13	1,299,005.08	2.738E+00	Pulse	1.00	3
Se			1	96.295	ug/l	0.86	6,890.47	2.672E-01	Pulse	3.00	3

ISTD Table

Tune	Element	Mass	CPS	RSD(%)	ISTD Recovery%	Det	Time(sec)	Rep
1	Bi		10,741,008.67	0.55	91.8	Analog	0.50	3
1	Sc		370,635.92	1.38	88.6	Pulse	0.30	3
1	Ge		309,155.71	0.34	88.8	Pulse	0.30	3
1	In		3,208,072.86	0.24	89.4	Pulse	0.30	3
1	Tb		14,780,321.33	0.38	95.7	Analog	0.50	3
1	Lu		8,656,454.67	0.84	95.6	Analog	0.50	3

Quantitation Report

Tune	Element	Mass	CPS	RSD(%)	ISTD Recovery%	Det	Time(sec)	Rep
1	Ge		474,537.43	0.49	89.2	Pulse	0.30	3
1	Te		25,784.84	0.31	84.8	Pulse	0.50	3
1	Li		2,561.29	3.52	75.8	Pulse	0.30	3

Quantitation Report

File Name 019_CCB.d
File Path D:\2018\05-May\x050718m1.b
Method File
Method Path
Acq Time 5/7/2018 11:13
Sample Name CCB
Sample Type CCB
Comment
Prep Dilution 1.000
Auto Dilution N/A
Total Dilution 1.000
Operator Name admin
Acq Mode Spectrum
Cal Title
Cal Type External Calibration
Last Calib 5/7/2018 10:39
Bkg File
Bkg Mode Count Subtraction except for ISTD
Interference File
FQ Blank File
VIS Fit Point to Point

Tune Step **Tune File**
 1

FullQuant Table

Element	Mass	ISTD	Tune	Conc	Units	RSD(%)	CPS	Ratio	Det	Time(sec)	Rep
Cr			1	0.680	ug/l	1.47	15,226.62	4.806E-02	Pulse	0.50	3
As			1	0.009	ug/l	43.49	40.00	1.262E-04	Pulse	1.00	3
Mo			1	0.050	ug/l	6.17	768.69	1.580E-03	Pulse	0.50	3
Pb			1	0.004	ug/l	61.23	3,709.08	3.234E-04	Pulse	1.00	3
Be			1	0.017	ug/l	95.00	2.33	6.329E-06	Pulse	2.00	3
Ag			1	0.010	ug/l	7.93	631.35	1.298E-03	Pulse	0.50	3
Ba			1	0.011	ug/l	28.11	76.67	2.313E-05	Pulse	0.50	3
Tl			1	0.024	ug/l	13.58	3,619.73	3.157E-04	Pulse	0.50	3
Sn			1	0.030	ug/l	30.82	1,285.61	3.873E-04	Pulse	0.30	3
Sr			1	0.005	ug/l	48.48	1,273.38	3.838E-04	Pulse	0.50	3
[Pb]			1	0.002	ug/l	176.50	1,704.09	1.486E-04	Pulse	0.50	3
Ca			1	1.692	ug/l	21.56	242.00	6.567E-04	Pulse	0.50	3
Tl			1	0.020	ug/l	87.84	8.00	2.166E-05	Pulse	0.50	3
Na			1	3.736	ug/l	2.74	17,768.86	4.822E-02	Pulse	1.00	3
Mg			1	2.002	ug/l	5.40	2,263.80	6.144E-03	Pulse	1.00	3
K			1	1.405	ug/l	18.33	12,422.58	3.371E-02	Pulse	1.00	3
V			1	-0.011	ug/l	-8.93	455.34	1.236E-03	Pulse	0.50	3
Mn			1	0.977	ug/l	2.33	10,110.66	3.191E-02	Pulse	0.50	3
Fe			1	2.454	ug/l	9.36	79,370.58	2.505E-01	Pulse	0.50	3
Co			1	0.008	ug/l	35.46	358.67	1.131E-03	Pulse	0.50	3
Ni			1	0.217	ug/l	8.46	3,535.67	1.116E-02	Pulse	0.50	3
Cu			1	-0.009	ug/l	-88.76	15,578.30	4.917E-02	Pulse	0.50	3
Zn			1	0.172	ug/l	16.70	2,696.86	5.544E-03	Pulse	1.00	3
Cd			1	0.004	ug/l	49.73	34.00	6.987E-05	Pulse	0.50	3
Al			1	32.153	ug/l	1.91	8,886.98	2.412E-02	Pulse	1.00	3
Se			1	-0.003	ug/l	-440.43	20.67	7.297E-04	Pulse	3.00	3
Sb			1	0.016	ug/l	9.63	379.34	7.799E-04	Pulse	1.00	3
Se			1	-0.124	ug/l	-47.11	22.78	8.025E-04	Pulse	3.00	3

Quantitation Report

ISTD Table

Tune	Element	Mass	CPS	RSD(%)	ISTD Recovery%	Det	Time(sec)	Rep
1	Bi		11,467,461.33	0.20	98.0	Analog	0.50	3
1	Sc		368,476.67	0.43	88.1	Pulse	0.30	3
1	Ge		316,853.52	0.88	91.0	Pulse	0.30	3
1	In		3,318,276.33	0.67	92.4	Pulse	0.30	3
1	Tb		15,021,125.00	1.19	97.3	Analog	0.50	3
1	Lu		8,791,899.00	0.43	97.1	Analog	0.50	3
1	Ge		486,434.57	0.45	91.5	Pulse	0.30	3
1	Te		28,335.24	1.26	93.2	Pulse	0.50	3
1	Li		2,870.22	3.85	84.9	Pulse	0.30	3

Quantitation Report

File Name 020_MB.d
File Path D:\2018\05-May\x050718m1.b
Method File
Method Path
Acq Time 5/7/2018 11:17
Sample Name MP33699-MB1
Sample Type MB
Comment
Prep Dilution 2.000
Auto Dilution N/A
Total Dilution 2.000
Operator Name admin
Acq Mode Spectrum
Cal Title
Cal Type External Calibration
Last Calib 5/7/2018 10:39
Bkg File
Bkg Mode Count Subtraction except for ISTD
Interference File
FQ Blank File
VIS Fit Point to Point

Tune Step **Tune File**
 1

FullQuant Table

Element	Mass	ISTD	Tune	Conc	Units	RSD(%)	CPS	Ratio	Det	Time(sec)	Rep
Cr			1	0.176	ug/l	3.80	2,652.86	9.358E-03	Pulse	0.50	3
As			1	0.075	ug/l	20.95	88.00	3.104E-04	Pulse	1.00	3
Mo			1	0.166	ug/l	6.63	1,134.70	2.605E-03	Pulse	0.50	3
Pb			1	0.056	ug/l	7.57	5,774.32	5.254E-04	Pulse	1.00	3
Be			1	0.017	ug/l	195.79	1.17	3.427E-06	Pulse	2.00	3
Ag			1	0.040	ug/l	6.36	1,093.37	2.510E-03	Pulse	0.50	3
Ba			1	0.053	ug/l	18.34	146.00	4.752E-05	Pulse	0.50	3
Tl			1	0.032	ug/l	15.77	2,357.51	2.147E-04	Pulse	0.50	3
Sn			1	0.725	ug/l	14.33	5,010.99	1.630E-03	Pulse	0.30	3
Sr			1	0.116	ug/l	15.55	1,673.41	5.446E-04	Pulse	0.50	3
[Pb]			1	0.048	ug/l	2.64	2,562.87	2.332E-04	Pulse	0.50	3
Ca			1	59.934	ug/l	1.22	1,305.38	3.832E-03	Pulse	0.50	3
Tl			1	0.226	ug/l	8.99	36.67	1.077E-04	Pulse	0.50	3
Na			1	17.541	ug/l	2.91	26,898.98	7.897E-02	Pulse	1.00	3
Mg			1	10.834	ug/l	5.61	5,157.34	1.514E-02	Pulse	1.00	3
K			1	3.895	ug/l	4.54	11,846.88	3.478E-02	Pulse	1.00	3
V			1	0.142	ug/l	16.15	1,506.73	4.424E-03	Pulse	0.50	3
Mn			1	-0.083	ug/l	-3.69	903.36	3.187E-03	Pulse	0.50	3
Fe			1	3.574	ug/l	10.66	61,267.65	2.161E-01	Pulse	0.50	3
Co			1	0.014	ug/l	7.30	291.33	1.028E-03	Pulse	0.50	3
Ni			1	-0.039	ug/l	-12.55	894.02	3.154E-03	Pulse	0.50	3
Cu			1	0.339	ug/l	1.43	18,740.45	6.611E-02	Pulse	0.50	3
Zn			1	1.718	ug/l	0.50	4,609.22	1.058E-02	Pulse	1.00	3
Cd			1	0.011	ug/l	27.16	37.33	8.572E-05	Pulse	0.50	3
Al			1	9.301	ug/l	8.84	1,480.06	4.345E-03	Pulse	1.00	3
Se			1	-0.003	ug/l	-1869.91	15.11	7.368E-04	Pulse	3.00	3
Sb			1	0.111	ug/l	8.87	814.02	1.869E-03	Pulse	1.00	3
Se			1	0.175	ug/l	58.41	28.44	1.388E-03	Pulse	3.00	3

Quantitation Report

ISTD Table

Tune	Element	Mass	CPS	RSD(%)	ISTD Recovery%	Det	Time(sec)	Rep
1	Bi		10,992,239.67	1.35	94.0	Analog	0.50	3
1	Sc		340,637.19	0.41	81.4	Pulse	0.30	3
1	Ge		283,485.89	0.27	81.4	Pulse	0.30	3
1	In		3,072,474.46	0.67	85.6	Pulse	0.30	3
1	Tb		14,523,809.00	0.91	94.0	Analog	0.50	3
1	Lu		8,535,648.67	0.75	94.3	Analog	0.50	3
1	Ge		435,544.39	0.25	81.9	Pulse	0.30	3
1	Te		20,501.49	0.32	67.4	Pulse	0.50	3
1	Li		2,657.97	5.90	78.7	Pulse	0.30	3

Quantitation Report

File Name 021_BSP.d
File Path D:\2018\05-May\x\050718m1.b
Method File
Method Path
Acq Time 5/7/2018 11:21
Sample Name MP33699-B1
Sample Type BSP
Comment
Prep Dilution 2.000
Auto Dilution N/A
Total Dilution 2.000
Operator Name admin
Acq Mode Spectrum
Cal Title
Cal Type External Calibration
Last Calib 5/7/2018 10:39
Bkg File
Bkg Mode Count Subtraction except for ISTD
Interference File
FQ Blank File
VIS Fit Point to Point

Tune Step 1
Tune File

FullQuant Table

Element	Mass	ISTD	Tune	Conc	Units	RSD(%)	CPS	Ratio	Det	Time(sec)	Rep
Cr			1	213.493	ug/l	2.06	1,918,930.08	6.975E+00	Pulse	0.50	3
As			1	194.507	ug/l	0.67	176,385.00	6.411E-01	Pulse	1.00	3
Mo			1	215.766	ug/l	0.85	1,407,640.96	3.343E+00	Pulse	0.50	3
Pb			1	207.209	ug/l	0.62	8,933,875.33	8.759E-01	Analog	1.00	3
Be			1	201.210	ug/l	0.81	12,004.20	3.493E-02	Pulse	2.00	3
Ag			1	102.933	ug/l	1.98	2,597,931.33	6.171E+00	Pulse	0.50	3
Ba			1	204.808	ug/l	0.67	469,840.92	1.574E-01	Pulse	0.50	3
Tl			1	199.024	ug/l	0.70	12,828,888.33	1.258E+00	Analog	0.50	3
Sn			1	205.215	ug/l	0.86	1,143,609.16	3.831E-01	Pulse	0.30	3
Sr			1	199.153	ug/l	0.67	898,307.67	3.009E-01	Pulse	0.50	3
[Pb]			1	193.454	ug/l	0.89	3,890,813.75	3.815E-01	Pulse	0.50	3
Ca			1	18807.732	ug/l	0.79	363,043.55	1.057E+00	Pulse	0.50	3
Ti			1	201.269	ug/l	0.85	32,001.41	9.313E-02	Pulse	0.50	3
Na			1	19272.779	ug/l	1.22	20,229,090.00	5.887E+01	Analog	1.00	3
Mg			1	19348.830	ug/l	1.07	8,755,250.67	2.548E+01	Analog	1.00	3
K			1	18871.136	ug/l	1.39	6,374,324.50	1.855E+01	Analog	1.00	3
V			1	204.500	ug/l	1.39	1,374,821.37	4.001E+00	Pulse	0.50	3
Mn			1	204.626	ug/l	1.37	795,305.69	2.891E+00	Pulse	0.50	3
Fe			1	20428.854	ug/l	1.04	144,914,282.67	5.267E+02	Analog	0.50	3
Co			1	212.738	ug/l	0.68	3,626,378.50	1.318E+01	Pulse	0.50	3
Ni			1	215.404	ug/l	0.71	1,006,061.17	3.657E+00	Pulse	0.50	3
Cu			1	212.550	ug/l	1.35	2,780,124.92	1.011E+01	Pulse	0.50	3
Zn			1	188.125	ug/l	0.87	292,122.07	6.938E-01	Pulse	1.00	3
Cd			1	207.363	ug/l	1.77	613,781.09	1.458E+00	Pulse	0.50	3
Al			1	17678.970	ug/l	0.88	2,184,129.08	6.356E+00	Pulse	1.00	3
Se			1	193.381	ug/l	0.90	10,375.92	5.290E-01	Pulse	3.00	3
Sb			1	202.464	ug/l	1.19	1,167,342.29	2.773E+00	Pulse	1.00	3
Se			1	196.083	ug/l	1.43	5,335.52	2.721E-01	Pulse	3.00	3

ISTD Table

Tune	Element	Mass	CPS	RSD(%)	ISTD Recovery%	Det	Time(sec)	Rep
1	Bi		10,200,025.00	0.60	87.2	Analog	0.50	3
1	Sc		343,629.72	1.16	82.2	Pulse	0.30	3
1	Ge		275,151.58	1.32	79.0	Pulse	0.30	3
1	In		2,985,325.99	0.60	83.2	Pulse	0.30	3
1	Tb		14,302,387.67	0.60	92.6	Analog	0.50	3
1	Lu		8,523,012.67	1.13	94.2	Analog	0.50	3

Quantitation Report

Tune	Element	Mass	CPS	RSD(%)	ISTD Recovery%	Det	Time(sec)	Rep
1	Ge		421,071.13	1.15	79.2	Pulse	0.30	3
1	Te		19,613.85	1.46	64.5	Pulse	0.50	3
1	Li		2,561.29	2.06	75.8	Pulse	0.30	3

Quantitation Report

File Name 022SMPL.d
File Path D:\2018\05-May\x\050718m1.b
Method File
Method Path
Acq Time 5/7/2018 11:24
Sample Name FA53625-18F
Sample Type Sample
Comment
Prep Dilution 2.000
Auto Dilution N/A
Total Dilution 2.000
Operator Name admin
Acq Mode Spectrum
Cal Title
Cal Type External Calibration
Last Calib 5/7/2018 10:39
Bkg File
Bkg Mode Count Subtraction except for ISTD
Interference File
FQ Blank File
VIS Fit Point to Point

Tune Step **Tune File**
 1

FullQuant Table

Element	Mass	ISTD	Tune	Conc	Units	RSD(%)	CPS	Ratio	Det	Time(sec)	Rep
Cr			1	0.297	ug/l	5.97	3,784.38	1.333E-02	Pulse	0.50	3
As			1	0.299	ug/l	11.09	298.00	1.050E-03	Pulse	1.00	3
Mo			1	1.031	ug/l	2.35	7,008.66	1.602E-02	Pulse	0.50	3
Pb			1	0.095	ug/l	8.77	7,281.56	6.907E-04	Pulse	1.00	3
Be			1	0.062	ug/l	28.50	3.83	1.114E-05	Pulse	2.00	3
Ag			1	0.020	ug/l	2.96	580.01	1.326E-03	Pulse	0.50	3
Ba			1	9.895	ug/l	3.40	23,062.69	7.610E-03	Pulse	0.50	3
Tl			1	0.060	ug/l	6.89	4,107.17	3.894E-04	Pulse	0.50	3
Sn			1	0.654	ug/l	5.06	4,536.19	1.497E-03	Pulse	0.30	3
Sr			1	159.575	ug/l	1.25	730,929.96	2.412E-01	Pulse	0.50	3
[Pb]			1	0.088	ug/l	5.75	3,295.00	3.125E-04	Pulse	0.50	3
Ca			1	35021.758	ug/l	0.77	677,653.12	1.967E+00	Pulse	0.50	3
Ti			1	0.261	ug/l	1.94	42.67	1.238E-04	Pulse	0.50	3
Na			1	12189.923	ug/l	0.13	12,832,167.00	3.725E+01	Analog	1.00	3
Mg			1	6753.886	ug/l	0.51	3,064,398.83	8.895E+00	Pulse	1.00	3
K			1	3743.154	ug/l	0.66	1,276,306.67	3.705E+00	Pulse	1.00	3
V			1	0.192	ug/l	3.38	1,864.76	5.412E-03	Pulse	0.50	3
Mn			1	1194.106	ug/l	1.12	4,781,738.17	1.685E+01	Pulse	0.50	3
Fe			1	277.514	ug/l	1.10	2,065,498.92	7.277E+00	Pulse	0.50	3
Co			1	4.607	ug/l	1.43	81,069.79	2.856E-01	Pulse	0.50	3
Ni			1	1.586	ug/l	0.95	8,717.32	3.071E-02	Pulse	0.50	3
Cu			1	0.281	ug/l	11.05	17,974.40	6.333E-02	Pulse	0.50	3
Zn			1	3.163	ug/l	2.18	6,947.26	1.588E-02	Pulse	1.00	3
Cd			1	0.125	ug/l	15.25	388.67	8.888E-04	Pulse	0.50	3
Al			1	11.027	ug/l	2.84	1,710.74	4.965E-03	Pulse	1.00	3
Se			1	0.046	ug/l	46.74	17.33	8.714E-04	Pulse	3.00	3
Sb			1	0.124	ug/l	3.39	895.02	2.045E-03	Pulse	1.00	3
Se			1	0.353	ug/l	58.91	32.44	1.633E-03	Pulse	3.00	3

ISTD Table

Tune	Element	Mass	CPS	RSD(%)	ISTD Recovery%	Det	Time(sec)	Rep
1	Bi		10,545,374.00	0.68	90.2	Analog	0.50	3
1	Sc		344,513.58	0.86	82.4	Pulse	0.30	3
1	Ge		283,814.45	0.41	81.5	Pulse	0.30	3
1	In		3,030,566.76	0.61	84.4	Pulse	0.30	3
1	Tb		14,471,681.00	0.79	93.7	Analog	0.50	3
1	Lu		8,484,361.67	0.39	93.7	Analog	0.50	3

Quantitation Report

Tune	Element	Mass	CPS	RSD(%)	ISTD Recovery%	Det	Time(sec)	Rep
1	Ge		437,569.12	0.59	82.3	Pulse	0.30	3
1	Te		19,901.52	1.36	65.4	Pulse	0.50	3
1	Li		2,602.41	2.16	77.0	Pulse	0.30	3

Quantitation Report

File Name 023SMPL.d
File Path D:\2018\05-May\x\050718m1.b
Method File
Method Path
Acq Time 5/7/2018 11:28
Sample Name MP33699-D1
Sample Type Sample
Comment
Prep Dilution 2.000
Auto Dilution N/A
Total Dilution 2.000
Operator Name admin
Acq Mode Spectrum
Cal Title
Cal Type External Calibration
Last Calib 5/7/2018 10:39
Bkg File
Bkg Mode Count Subtraction except for ISTD
Interference File
FQ Blank File
VIS Fit Point to Point

Tune Step **Tune File**
 1

FullQuant Table

Element	Mass	ISTD	Tune	Conc	Units	RSD(%)	CPS	Ratio	Det	Time(sec)	Rep
Cr			1	0.301	ug/l	6.98	3,848.40	1.34E-02	Pulse	0.50	3
As			1	0.282	ug/l	3.61	284.67	9.938E-04	Pulse	1.00	3
Mo			1	0.999	ug/l	5.76	6,843.93	1.551E-02	Pulse	0.50	3
Pb			1	0.075	ug/l	2.64	6,452.23	6.088E-04	Pulse	1.00	3
Be			1	0.031	ug/l	0.81	2.00	5.724E-06	Pulse	2.00	3
Ag			1	0.013	ug/l	10.76	398.68	9.032E-04	Pulse	0.50	3
Ba			1	9.438	ug/l	0.57	22,283.05	7.259E-03	Pulse	0.50	3
Tl			1	0.019	ug/l	18.72	1,404.06	1.325E-04	Pulse	0.50	3
Sn			1	0.519	ug/l	1.75	3,822.64	1.245E-03	Pulse	0.30	3
Sr			1	160.932	ug/l	0.82	746,668.87	2.432E-01	Pulse	0.50	3
[Pb]			1	0.071	ug/l	8.80	2,958.27	2.791E-04	Pulse	0.50	3
Ca			1	35718.922	ug/l	1.31	700,898.58	2.006E+00	Pulse	0.50	3
Ti			1	0.207	ug/l	29.99	34.67	9.913E-05	Pulse	0.50	3
Na			1	12287.893	ug/l	1.35	13,117,566.00	3.755E+01	Analog	1.00	3
Mg			1	6895.782	ug/l	1.32	3,172,892.00	9.082E+00	Pulse	1.00	3
K			1	3787.528	ug/l	1.32	1,309,515.13	3.748E+00	Pulse	1.00	3
V			1	0.174	ug/l	6.76	1,770.09	5.065E-03	Pulse	0.50	3
Mn			1	1219.601	ug/l	0.43	4,928,399.67	1.721E+01	Pulse	0.50	3
Fe			1	283.387	ug/l	1.04	2,127,650.67	7.429E+00	Pulse	0.50	3
Co			1	4.734	ug/l	1.25	84,049.03	2.935E-01	Pulse	0.50	3
Ni			1	1.586	ug/l	2.59	8,795.36	3.071E-02	Pulse	0.50	3
Cu			1	0.149	ug/l	5.31	16,354.94	5.710E-02	Pulse	0.50	3
Zn			1	2.526	ug/l	0.71	5,978.60	1.354E-02	Pulse	1.00	3
Cd			1	0.119	ug/l	6.82	371.34	8.417E-04	Pulse	0.50	3
Al			1	9.946	ug/l	8.42	1,598.74	4.577E-03	Pulse	1.00	3
Se			1	0.029	ug/l	147.20	16.56	8.249E-04	Pulse	3.00	3
Sb			1	0.080	ug/l	4.04	637.34	1.444E-03	Pulse	1.00	3
Se			1	0.586	ug/l	26.20	39.22	1.955E-03	Pulse	3.00	3

ISTD Table

Tune	Element	Mass	CPS	RSD(%)	ISTD Recovery%	Det	Time(sec)	Rep
1	Bi		10,598,527.67	0.57	90.6	Analog	0.50	3
1	Sc		349,394.14	0.76	83.5	Pulse	0.30	3
1	Ge		286,415.33	0.80	82.3	Pulse	0.30	3
1	In		3,069,890.36	0.83	85.5	Pulse	0.30	3
1	Tb		14,611,236.67	0.44	94.6	Analog	0.50	3
1	Lu		8,600,660.33	1.18	95.0	Analog	0.50	3

Quantitation Report

Tune	Element	Mass	CPS	RSD(%)	ISTD Recovery%	Det	Time(sec)	Rep
1	Ge		441,391.40	1.16	83.0	Pulse	0.30	3
1	Te		20,089.04	2.43	66.1	Pulse	0.50	3
1	Li		2,867.99	2.91	84.9	Pulse	0.30	3

Quantitation Report

File Name 024SMPL.d
File Path D:\2018\05-May\x050718m1.b
Method File
Method Path
Acq Time 5/7/2018 11:31
Sample Name MP33699-SD1
Sample Type Sample
Comment
Prep Dilution 10.000
Auto Dilution N/A
Total Dilution 10.000
Operator Name admin
Acq Mode Spectrum
Cal Title
Cal Type External Calibration
Last Calib 5/7/2018 10:39
Bkg File
Bkg Mode Count Subtraction except for ISTD
Interference File
FQ Blank File
VIS Fit Point to Point

Tune Step 1 **Tune File**

FullQuant Table

Element	Mass	ISTD	Tune	Conc	Units	RSD(%)	CPS	Ratio	Det	Time(sec)	Rep
Cr			1	0.188	ug/l	16.35	1,538.73	4.847E-03	Pulse	0.50	3
As			1	0.283	ug/l	12.52	79.67	2.509E-04	Pulse	1.00	3
Mo			1	1.071	ug/l	2.29	1,629.41	3.355E-03	Pulse	0.50	3
Pb			1	0.245	ug/l	3.66	5,687.95	4.968E-04	Pulse	1.00	3
Be			1	0.117	ug/l	100.62	1.67	4.448E-06	Pulse	2.00	3
Ag			1	0.032	ug/l	10.56	248.00	5.106E-04	Pulse	0.50	3
Ba			1	9.609	ug/l	3.30	4,900.02	1.483E-03	Pulse	0.50	3
Tl			1	0.044	ug/l	18.71	767.35	6.706E-05	Pulse	0.50	3
Sn			1	0.479	ug/l	9.47	1,505.63	4.559E-04	Pulse	0.30	3
Sr			1	165.033	ug/l	0.55	165,744.16	5.018E-02	Pulse	0.50	3
[Pb]			1	0.220	ug/l	9.29	2,588.21	2.261E-04	Pulse	0.50	3
Ca			1	37039.275	ug/l	0.78	155,820.87	4.164E-01	Pulse	0.50	3
Tl			1	0.600	ug/l	41.73	22.00	5.877E-05	Pulse	0.50	3
Na			1	12626.972	ug/l	0.64	2,894,866.00	7.737E+00	Pulse	1.00	3
Mg			1	7260.325	ug/l	0.14	715,816.77	1.913E+00	Pulse	1.00	3
K			1	3978.644	ug/l	0.68	303,804.42	8.119E-01	Pulse	1.00	3
V			1	0.132	ug/l	42.63	811.35	2.168E-03	Pulse	0.50	3
Mn			1	1226.477	ug/l	0.94	1,099,814.21	3.464E+00	Pulse	0.50	3
Fe			1	288.975	ug/l	0.66	512,321.28	1.614E+00	Pulse	0.50	3
Co			1	4.769	ug/l	1.49	18,821.18	5.929E-02	Pulse	0.50	3
Ni			1	1.123	ug/l	4.51	2,420.16	7.623E-03	Pulse	0.50	3
Cu			1	2.167	ug/l	3.60	22,399.67	7.056E-02	Pulse	0.50	3
Zn			1	4.236	ug/l	2.03	3,589.01	7.390E-03	Pulse	1.00	3
Cd			1	0.163	ug/l	12.65	114.67	2.361E-04	Pulse	0.50	3
Al			1	71.093	ug/l	3.35	2,287.13	6.113E-03	Pulse	1.00	3
Se			1	-0.187	ug/l	-119.24	16.45	6.433E-04	Pulse	3.00	3
Sb			1	0.101	ug/l	13.41	306.00	6.301E-04	Pulse	1.00	3
Se			1	0.099	ug/l	198.82	30.00	1.173E-03	Pulse	3.00	3

ISTD Table

Tune	Element	Mass	CPS	RSD(%)	ISTD Recovery%	Det	Time(sec)	Rep
1	Bi		11,447,643.33	0.44	97.9	Analog	0.50	3
1	Sc		374,175.79	0.28	89.5	Pulse	0.30	3
1	Ge		317,463.70	0.12	91.2	Pulse	0.30	3

Quantitation Report

Tune	Element	Mass	CPS	RSD(%)	ISTD Recovery%	Det	Time(sec)	Rep
1	In		3,303,022.86	0.73	92.0	Pulse	0.30	3
1	Tb		15,015,612.33	0.44	97.2	Analog	0.50	3
1	Lu		8,771,007.67	0.22	96.9	Analog	0.50	3
1	Ge		485,656.00	0.09	91.3	Pulse	0.30	3
1	Te		25,583.89	0.81	84.1	Pulse	0.50	3
1	Li		2,939.12	2.16	87.0	Pulse	0.30	3

Quantitation Report

File Name 025SMPL.d
File Path D:\2018\05-May\x\050718m1.b
Method File
Method Path
Acq Time 5/7/2018 11:35
Sample Name MP33699-S1
Sample Type Sample
Comment
Prep Dilution 2.000
Auto Dilution N/A
Total Dilution 2.000
Operator Name admin
Acq Mode Spectrum
Cal Title
Cal Type External Calibration
Last Calib 5/7/2018 10:39
Bkg File
Bkg Mode Count Subtraction except for ISTD
Interference File
FQ Blank File
VIS Fit Point to Point

Tune Step 1 **Tune File**

FullQuant Table

Element	Mass	ISTD	Tune	Conc	Units	RSD(%)	CPS	Ratio	Det	Time(sec)	Rep
Cr			1	216.217	ug/l	1.41	1,952,726.13	7.064E+00	Pulse	0.50	3
As			1	196.025	ug/l	1.17	178,595.36	6.461E-01	Pulse	1.00	3
Mo			1	218.940	ug/l	1.12	1,442,057.21	3.392E+00	Pulse	0.50	3
Pb			1	214.744	ug/l	1.20	9,028,508.33	9.077E-01	Analog	1.00	3
Be			1	205.341	ug/l	1.88	12,222.33	3.565E-02	Pulse	2.00	3
Ag			1	107.316	ug/l	1.72	2,734,682.17	6.433E+00	Pulse	0.50	3
Ba			1	218.096	ug/l	0.47	490,489.95	1.676E-01	Pulse	0.50	3
Tl			1	204.878	ug/l	0.81	12,878,290.00	1.295E+00	Analog	0.50	3
Sn			1	210.551	ug/l	0.79	1,150,252.59	3.930E-01	Pulse	0.30	3
Sr			1	370.232	ug/l	0.51	1,636,256.12	5.591E-01	Pulse	0.50	3
[Pb]			1	199.745	ug/l	0.77	3,917,486.58	3.939E-01	Pulse	0.50	3
Ca			1	54972.203	ug/l	1.35	1,058,429.08	3.087E+00	Pulse	0.50	3
Ti			1	207.944	ug/l	1.13	32,988.35	9.622E-02	Pulse	0.50	3
Na			1	32307.559	ug/l	0.87	33,830,638.67	9.868E-01	Analog	1.00	3
Mg			1	26767.191	ug/l	1.47	12,084,785.33	3.525E+01	Analog	1.00	3
K			1	23314.222	ug/l	0.62	7,855,654.00	2.291E+01	Analog	1.00	3
V			1	211.043	ug/l	1.45	1,415,673.87	4.129E+00	Pulse	0.50	3
Mn			1	1470.018	ug/l	1.13	5,733,068.67	2.074E+01	Analog	0.50	3
Fe			1	20955.262	ug/l	1.88	149,344,912.00	5.403E+02	Analog	0.50	3
Co			1	217.646	ug/l	1.17	3,727,465.17	1.348E+01	Pulse	0.50	3
Ni			1	217.461	ug/l	1.14	1,020,431.75	3.691E+00	Pulse	0.50	3
Cu			1	210.328	ug/l	1.54	2,764,209.83	1.000E+01	Pulse	0.50	3
Zn			1	185.980	ug/l	1.28	291,582.15	6.859E-01	Pulse	1.00	3
Cd			1	204.402	ug/l	1.83	610,837.10	1.437E+00	Pulse	0.50	3
Al			1	18067.556	ug/l	0.88	2,227,189.58	6.496E+00	Pulse	1.00	3
Se			1	203.664	ug/l	0.36	10,348.69	5.571E-01	Pulse	3.00	3
Sb			1	202.071	ug/l	1.53	1,176,270.75	2.767E+00	Pulse	1.00	3
Se			1	203.612	ug/l	1.37	5,246.95	2.825E-01	Pulse	3.00	3

ISTD Table

Tune	Element	Mass	CPS	RSD(%)	ISTD Recovery%	Det	Time(sec)	Rep
1	Bi		9,946,476.33	0.30	85.0	Analog	0.50	3
1	Sc		342,866.84	1.02	82.0	Pulse	0.30	3
1	Ge		276,442.63	0.74	79.4	Pulse	0.30	3
1	In		2,926,667.94	0.45	81.5	Pulse	0.30	3
1	Tb		14,230,729.33	0.43	92.1	Analog	0.50	3
1	Lu		8,444,354.67	0.72	93.3	Analog	0.50	3

Quantitation Report

Tune	Element	Mass	CPS	RSD(%)	ISTD Recovery%	Det	Time(sec)	Rep
1	Ge		425,113.66	0.86	79.9	Pulse	0.30	3
1	Te		18,575.44	0.51	61.1	Pulse	0.50	3
1	Li		2,717.98	5.61	80.4	Pulse	0.30	3

Quantitation Report

File Name 026SMPL.d
File Path D:\2018\05-May\x\050718m1.b
Method File
Method Path
Acq Time 5/7/2018 11:39
Sample Name MP33699-S2
Sample Type Sample
Comment
Prep Dilution 2.000
Auto Dilution N/A
Total Dilution 2.000
Operator Name admin
Acq Mode Spectrum
Cal Title
Cal Type External Calibration
Last Calib 5/7/2018 10:39
Bkg File
Bkg Mode Count Subtraction except for ISTD
Interference File
FQ Blank File
VIS Fit Point to Point

Tune Step 1 **Tune File**

FullQuant Table

Element	Mass	ISTD	Tune	Conc	Units	RSD(%)	CPS	Ratio	Det	Time(sec)	Rep
Cr			1	206.832	ug/l	0.35	1,870,940.75	6.758E+00	Pulse	0.50	3
As			1	188.902	ug/l	0.67	172,372.50	6.226E-01	Pulse	1.00	3
Mo			1	210.300	ug/l	0.31	1,382,013.54	3.259E+00	Pulse	0.50	3
Pb			1	205.085	ug/l	0.94	8,670,492.00	8.669E-01	Analog	1.00	3
Be			1	197.170	ug/l	1.58	11,883.63	3.423E-02	Pulse	2.00	3
Ag			1	104.083	ug/l	0.27	2,646,388.17	6.240E+00	Pulse	0.50	3
Ba			1	207.823	ug/l	0.18	472,359.64	1.597E-01	Pulse	0.50	3
Tl			1	196.286	ug/l	1.29	12,406,562.67	1.240E+00	Analog	0.50	3
Sn			1	200.731	ug/l	0.31	1,108,312.08	3.747E-01	Pulse	0.30	3
Sr			1	354.575	ug/l	0.56	1,583,790.50	5.355E-01	Pulse	0.50	3
[Pb]			1	190.287	ug/l	1.02	3,752,799.17	3.752E-01	Pulse	0.50	3
Ca			1	53055.831	ug/l	0.34	1,034,374.04	2.980E+00	Pulse	0.50	3
Ti			1	198.382	ug/l	2.98	31,863.89	9.179E-02	Pulse	0.50	3
Na			1	30912.926	ug/l	0.58	32,775,242.00	9.442E+01	Analog	1.00	3
Mg			1	25540.542	ug/l	0.91	11,675,396.67	3.363E+01	Analog	1.00	3
K			1	22200.673	ug/l	0.87	7,574,234.67	2.182E+01	Analog	1.00	3
V			1	199.843	ug/l	0.72	1,357,355.87	3.910E+00	Pulse	0.50	3
Mn			1	1436.656	ug/l	0.89	5,611,592.83	2.027E+01	Analog	0.50	3
Fe			1	20109.792	ug/l	0.98	143,544,933.33	5.185E+02	Analog	0.50	3
Co			1	209.544	ug/l	1.11	3,594,162.00	1.298E+01	Pulse	0.50	3
Ni			1	208.339	ug/l	1.55	979,143.38	3.537E+00	Pulse	0.50	3
Cu			1	203.307	ug/l	0.29	2,676,617.67	9.668E+00	Pulse	0.50	3
Zn			1	179.175	ug/l	0.61	280,345.79	6.610E-01	Pulse	1.00	3
Cd			1	198.660	ug/l	0.76	592,356.08	1.397E+00	Pulse	0.50	3
Al			1	17166.309	ug/l	0.60	2,142,600.67	6.172E+00	Pulse	1.00	3
Se			1	193.354	ug/l	1.25	9,891.89	5.290E-01	Pulse	3.00	3
Sb			1	194.029	ug/l	0.43	1,126,923.25	2.657E+00	Pulse	1.00	3
Se			1	197.946	ug/l	1.83	5,135.70	2.746E-01	Pulse	3.00	3

ISTD Table

Tune	Element	Mass	CPS	RSD(%)	ISTD Recovery%	Det	Time(sec)	Rep
1	Bi		10,001,999.33	0.66	85.5	Analog	0.50	3
1	Sc		347,141.72	0.74	83.0	Pulse	0.30	3
1	Ge		276,860.60	0.58	79.5	Pulse	0.30	3
1	In		2,957,749.61	0.36	82.4	Pulse	0.30	3
1	Tb		14,310,083.33	0.42	92.7	Analog	0.50	3
1	Lu		8,473,638.67	0.76	93.6	Analog	0.50	3

Quantitation Report

Tune	Element	Mass	CPS	RSD(%)	ISTD Recovery%	Det	Time(sec)	Rep
1	Ge		424,124.30	0.08	79.7	Pulse	0.30	3
1	Te		18,702.24	0.96	61.5	Pulse	0.50	3
1	Li		2,515.73	2.04	74.4	Pulse	0.30	3

Quantitation Report

File Name 027SMPL.d
File Path D:\2018\05-May\x\050718m1.b
Method File
Method Path
Acq Time 5/7/2018 11:42
Sample Name MP33699-PS1
Sample Type Sample
Comment
Prep Dilution 2.000
Auto Dilution N/A
Total Dilution 2.000
Operator Name admin
Acq Mode Spectrum
Cal Title
Cal Type External Calibration
Last Calib 5/7/2018 10:39
Bkg File
Bkg Mode Count Subtraction except for ISTD
Interference File
FQ Blank File
VIS Fit Point to Point

Tune Step **Tune File**
1

FullQuant Table

Element	Mass	ISTD	Tune	Conc	Units	RSD(%)	CPS	Ratio	Det	Time(sec)	Rep
Cr			1	20.785	ug/l	1.27	194,876.22	6.824E-01	Pulse	0.50	3
As			1	19.212	ug/l	0.73	18,100.88	6.338E-02	Pulse	1.00	3
Mo			1	21.487	ug/l	0.14	146,413.33	3.330E-01	Pulse	0.50	3
Pb			1	19.482	ug/l	0.52	869,349.48	8.261E-02	Pulse	1.00	3
Be			1	19.817	ug/l	1.03	1,205.04	3.441E-03	Pulse	2.00	3
Ag			1	4.248	ug/l	1.14	112,046.65	2.548E-01	Pulse	0.50	3
Ba			1	29.884	ug/l	0.55	69,698.66	2.297E-02	Pulse	0.50	3
Tl			1	18.691	ug/l	0.75	1,243,042.54	1.181E-01	Pulse	0.50	3
Sn			1	21.134	ug/l	1.77	120,455.80	3.970E-02	Pulse	0.30	3
Sr			1	183.353	ug/l	1.06	840,686.23	2.771E-01	Pulse	0.50	3
[Pb]			1	18.900	ug/l	0.85	393,474.64	3.739E-02	Pulse	0.50	3
Ca			1	37928.589	ug/l	0.68	746,030.42	2.130E+00	Pulse	0.50	3
Ti			1	20.913	ug/l	1.67	3,389.64	9.680E-03	Pulse	0.50	3
Na			1	14421.176	ug/l	1.49	15,428,979.00	4.406E+01	Analog	1.00	3
Mg			1	8827.156	ug/l	1.68	4,070,800.92	1.163E+01	Pulse	1.00	3
K			1	5709.767	ug/l	0.80	1,973,301.46	5.635E+00	Pulse	1.00	3
V			1	20.426	ug/l	1.02	140,481.60	4.012E-01	Pulse	0.50	3
Mn			1	1251.578	ug/l	0.11	5,043,181.00	1.766E+01	Pulse	0.50	3
Fe			1	2327.432	ug/l	1.13	17,169,353.33	6.012E+01	Analog	0.50	3
Co			1	25.154	ug/l	0.11	445,122.79	1.559E+00	Pulse	0.50	3
Ni			1	22.286	ug/l	0.44	109,020.42	3.817E-01	Pulse	0.50	3
Cu			1	21.359	ug/l	0.92	302,865.80	1.060E+00	Pulse	0.50	3
Zn			1	21.440	ug/l	0.97	36,438.57	8.287E-02	Pulse	1.00	3
Cd			1	19.161	ug/l	0.76	59,234.90	1.347E-01	Pulse	0.50	3
Al			1	1798.296	ug/l	1.16	226,739.05	6.475E-01	Pulse	1.00	3
Se			1	18.949	ug/l	4.38	1,045.47	5.251E-02	Pulse	3.00	3
Sb			1	18.276	ug/l	0.48	110,191.00	2.506E-01	Pulse	1.00	3
Se			1	19.624	ug/l	2.88	562.68	2.826E-02	Pulse	3.00	3

ISTD Table

Tune	Element	Mass	CPS	RSD(%)	ISTD Recovery%	Det	Time(sec)	Rep
1	Bi		10,522,986.33	0.78	90.0	Analog	0.50	3
1	Sc		350,221.84	1.24	83.7	Pulse	0.30	3
1	Ge		285,593.75	0.09	82.0	Pulse	0.30	3
1	In		3,034,337.31	0.90	84.5	Pulse	0.30	3
1	Tb		14,554,626.67	0.74	94.2	Analog	0.50	3
1	Lu		8,589,397.33	0.25	94.9	Analog	0.50	3

Quantitation Report

Tune	Element	Mass	CPS	RSD(%)	ISTD Recovery%	Det	Time(sec)	Rep
1	Ge		439,716.63	0.39	82.7	Pulse	0.30	3
1	Te		19,911.52	0.97	65.5	Pulse	0.50	3
1	Li		2,747.98	1.78	81.3	Pulse	0.30	3

Quantitation Report

File Name 028SMPL.d
File Path D:\2018\05-May\x\050718m1.b
Method File
Method Path
Acq Time 5/7/2018 11:46
Sample Name FA53625-10F
Sample Type Sample
Comment
Prep Dilution 2.000
Auto Dilution N/A
Total Dilution 2.000
Operator Name admin
Acq Mode Spectrum
Cal Title
Cal Type External Calibration
Last Calib 5/7/2018 10:39
Bkg File
Bkg Mode Count Subtraction except for ISTD
Interference File
FQ Blank File
VIS Fit Point to Point

Tune Step **Tune File**
 1

FullQuant Table

Element	Mass	ISTD	Tune	Conc	Units	RSD(%)	CPS	Ratio	Det	Time(sec)	Rep
Cr			1	12.119	ug/l	0.89	114,931.87	3.994E-01	Pulse	0.50	3
As			1	0.094	ug/l	19.77	107.33	3.730E-04	Pulse	1.00	3
Mo			1	1.379	ug/l	2.27	9,428.40	2.141E-02	Pulse	0.50	3
Pb			1	0.077	ug/l	10.59	6,486.11	6.137E-04	Pulse	1.00	3
Be			1	0.042	ug/l	40.97	2.67	7.613E-06	Pulse	2.00	3
Ag			1	0.014	ug/l	11.31	437.34	9.932E-04	Pulse	0.50	3
Ba			1	13.825	ug/l	1.57	32,436.32	1.063E-02	Pulse	0.50	3
Tl			1	0.024	ug/l	7.42	1,751.43	1.657E-04	Pulse	0.50	3
Sn			1	0.559	ug/l	7.28	4,027.14	1.320E-03	Pulse	0.30	3
Sr			1	126.876	ug/l	1.09	585,407.90	1.918E-01	Pulse	0.50	3
[Pb]			1	0.072	ug/l	6.84	2,970.94	2.811E-04	Pulse	0.50	3
Ca			1	34371.210	ug/l	0.61	676,018.96	1.930E+00	Pulse	0.50	3
Ti			1	0.137	ug/l	31.88	23.33	6.668E-05	Pulse	0.50	3
Na			1	15847.961	ug/l	1.31	16,954,130.00	4.842E+01	Analog	1.00	3
Mg			1	7510.730	ug/l	1.04	3,463,728.17	9.892E+00	Pulse	1.00	3
K			1	2847.651	ug/l	0.67	989,521.79	2.826E+00	Pulse	1.00	3
V			1	0.240	ug/l	5.76	2,221.47	6.345E-03	Pulse	0.50	3
Mn			1	22.948	ug/l	0.92	94,410.22	3.281E-01	Pulse	0.50	3
Fe			1	60.874	ug/l	2.01	487,284.22	1.693E+00	Pulse	0.50	3
Co			1	1.847	ug/l	0.37	32,990.71	1.146E-01	Pulse	0.50	3
Ni			1	92.265	ug/l	0.62	451,379.10	1.568E+00	Pulse	0.50	3
Cu			1	2.264	ug/l	0.66	45,226.04	1.572E-01	Pulse	0.50	3
Zn			1	5.152	ug/l	2.36	10,202.37	2.317E-02	Pulse	1.00	3
Cd			1	0.092	ug/l	12.23	288.67	6.555E-04	Pulse	0.50	3
Al			1	8.544	ug/l	4.23	1,426.39	4.073E-03	Pulse	1.00	3
Se			1	0.198	ug/l	48.59	25.56	1.286E-03	Pulse	3.00	3
Sb			1	0.096	ug/l	14.02	733.02	1.665E-03	Pulse	1.00	3
Se			1	0.459	ug/l	31.07	35.33	1.779E-03	Pulse	3.00	3

ISTD Table

Tune	Element	Mass	CPS	RSD(%)	ISTD Recovery%	Det	Time(sec)	Rep
1	Bi		10,571,508.00	0.63	90.4	Analog	0.50	3
1	Sc		350,189.50	0.76	83.7	Pulse	0.30	3
1	Ge		287,788.34	0.11	82.7	Pulse	0.30	3
1	In		3,051,685.16	0.74	85.0	Pulse	0.30	3
1	Tb		14,617,996.33	1.01	94.6	Analog	0.50	3
1	Lu		8,630,830.33	0.57	95.4	Analog	0.50	3

Quantitation Report

Tune	Element	Mass	CPS	RSD(%)	ISTD Recovery%	Det	Time(sec)	Rep
1	Ge		440,342.74	0.30	82.8	Pulse	0.30	3
1	Te		19,852.77	0.88	65.3	Pulse	0.50	3
1	Li		2,861.33	1.25	84.7	Pulse	0.30	3

Quantitation Report

File Name 029SMPL.d
File Path D:\2018\05-May\x\050718m1.b
Method File
Method Path
Acq Time 5/7/2018 11:50
Sample Name FA53625-11F
Sample Type Sample
Comment
Prep Dilution 2.000
Auto Dilution N/A
Total Dilution 2.000
Operator Name admin
Acq Mode Spectrum
Cal Title
Cal Type External Calibration
Last Calib 5/7/2018 10:39
Bkg File
Bkg Mode Count Subtraction except for ISTD
Interference File
FQ Blank File
VIS Fit Point to Point

Tune Step	Tune File
1	

FullQuant Table

Element	Mass	ISTD	Tune	Conc	Units	RSD(%)	CPS	Ratio	Det	Time(sec)	Rep
Cr			1	15.324	ug/l	0.79	136,201.89	5.040E-01	Pulse	0.50	3
As			1	0.569	ug/l	8.16	524.34	1.940E-03	Pulse	1.00	3
Mo			1	15.125	ug/l	0.98	96,037.06	2.344E-01	Pulse	0.50	3
Pb			1	1.244	ug/l	0.99	46,209.10	5.545E-03	Pulse	1.00	3
Be			1	0.018	ug/l	106.28	1.33	3.582E-06	Pulse	2.00	3
Ag			1	0.017	ug/l	12.87	459.34	1.121E-03	Pulse	0.50	3
Ba			1	1523.847	ug/l	0.43	3,357,964.83	1.171E+00	Pulse	0.50	3
Tl			1	0.022	ug/l	13.65	1,272.05	1.526E-04	Pulse	0.50	3
Sn			1	0.579	ug/l	2.92	3,890.44	1.356E-03	Pulse	0.30	3
Sr			1	39947.114	ug/l	1.35	172,876,469.33	6.029E+01	Analog	0.50	3
[Pb]			1	1.230	ug/l	1.63	21,366.00	2.564E-03	Pulse	0.50	3
Ca			1	583155.343	ug/l	0.66	12,306,266.33	3.275E+01	Analog	0.50	3
Ti			1	0.668	ug/l	31.76	117.33	3.123E-04	Pulse	0.50	3
Na			1	259711.099	ug/l	0.55	298,046,176.00	7.930E+02	Analog	1.00	3
Mg			1	40.352	ug/l	2.18	20,295.25	5.401E-02	Pulse	1.00	3
K			1	556693.395	ug/l	0.48	205,345,312.00	5.464E+02	Analog	1.00	3
V			1	4.815	ug/l	0.76	36,013.16	9.583E-02	Pulse	0.50	3
Mn			1	1.605	ug/l	0.63	7,295.39	2.700E-02	Pulse	0.50	3
Fe			1	98.249	ug/l	2.01	717,885.62	2.657E+00	Pulse	0.50	3
Co			1	12.205	ug/l	0.27	204,390.51	7.564E-01	Pulse	0.50	3
Ni			1	9.113	ug/l	1.29	42,793.78	1.584E-01	Pulse	0.50	3
Cu			1	14.154	ug/l	0.10	194,468.31	7.196E-01	Pulse	0.50	3
Zn			1	6.027	ug/l	2.25	10,806.36	2.637E-02	Pulse	1.00	3
Cd			1	7.906	ug/l	0.68	22,778.02	5.559E-02	Pulse	0.50	3
Al			1	5144.146	ug/l	0.69	695,357.29	1.850E+00	Pulse	1.00	3
Se			1	0.796	ug/l	9.99	49.78	2.919E-03	Pulse	3.00	3
Sb			1	0.113	ug/l	3.96	777.35	1.897E-03	Pulse	1.00	3
Se			1	1.953	ug/l	18.60	65.56	3.844E-03	Pulse	3.00	3

ISTD Table

Tune	Element	Mass	CPS	RSD(%)	ISTD Recovery%	Det	Time(sec)	Rep
1	Bi		8,333,657.67	0.53	71.3	Analog	0.50	3
1	Sc		375,836.57	1.54	89.9	Pulse	0.30	3
1	Ge		270,230.39	0.71	77.6	Pulse	0.30	3
1	In		2,867,762.46	0.74	79.9	Pulse	0.30	3
1	Tb		13,302,524.00	0.41	86.1	Analog	0.50	3
1	Lu		8,013,995.17	0.75	88.5	Analog	0.50	3

Quantitation Report

Tune	Element	Mass	CPS	RSD(%)	ISTD Recovery%	Det	Time(sec)	Rep
1	Ge		409,750.54	1.07	77.0	Pulse	0.30	3
1	Te		17,061.99	1.18	56.1	Pulse	0.50	3
1	Li		3,430.32	4.29	101.5	Pulse	0.30	3

Quantitation Report

File Name 030CCVA.d
File Path D:\2018\05-May\x050718m1.b
Method File
Method Path
Acq Time 5/7/2018 11:53
Sample Name CCV (Ag)
Sample Type CCV_Ag
Comment =std 4
Prep Dilution 1.000
Auto Dilution N/A
Total Dilution 1.000
Operator Name admin
Acq Mode Spectrum
Cal Title
Cal Type External Calibration
Last Calib 5/7/2018 10:39
Bkg File
Bkg Mode Count Subtraction except for ISTD
Interference File
FQ Blank File
VIS Fit Point to Point

Tune Step 1 **Tune File**

FullQuant Table

Element	Mass	ISTD	Tune	Conc	Units	RSD(%)	CPS	Ratio	Det	Time(sec)	Rep
Cr			1	49.221	ug/l	1.21	1,016,297.69	3.218E+00	Pulse	0.50	3
As			1	50.013	ug/l	0.87	104,120.49	3.297E-01	Pulse	1.00	3
Mo			1	49.441	ug/l	1.50	740,844.63	1.532E+00	Pulse	0.50	3
Pb			1	47.335	ug/l	0.55	4,465,471.67	4.003E-01	Pulse	1.00	3
Be			1	52.336	ug/l	2.53	6,851.82	1.817E-02	Pulse	2.00	3
Ag			1	50.353	ug/l	0.41	2,919,310.08	6.037E+00	Pulse	0.50	3
Ba			1	49.550	ug/l	1.33	248,979.26	7.616E-02	Pulse	0.50	3
Tl			1	48.496	ug/l	0.60	6,837,479.83	6.130E-01	Analog	0.50	3
Sn			1	49.762	ug/l	0.95	607,845.18	1.859E-01	Pulse	0.30	3
Sr			1	49.152	ug/l	1.23	486,211.38	1.487E-01	Pulse	0.50	3
[Pb]			1	47.509	ug/l	1.16	2,090,772.84	1.874E-01	Pulse	0.50	3
Ca			1	4972.168	ug/l	1.14	210,730.81	5.589E-01	Pulse	0.50	3
Tl			1	49.283	ug/l	1.63	17,197.57	4.561E-02	Pulse	0.50	3
Na			1	5039.193	ug/l	2.05	11,612,452.67	3.080E+01	Analog	1.00	3
Mg			1	5065.248	ug/l	1.45	5,030,454.33	1.334E+01	Analog	1.00	3
K			1	4951.043	ug/l	1.76	3,675,924.17	9.749E+00	Pulse	1.00	3
V			1	49.795	ug/l	1.40	735,053.33	1.949E+00	Pulse	0.50	3
Mn			1	49.048	ug/l	0.59	438,367.44	1.388E+00	Pulse	0.50	3
Fe			1	5069.278	ug/l	1.28	82,566,408.00	2.615E+02	Analog	0.50	3
Co			1	49.682	ug/l	1.08	1,944,078.67	6.156E+00	Pulse	0.50	3
Ni			1	51.112	ug/l	1.42	548,608.42	1.737E+00	Pulse	0.50	3
Cu			1	51.297	ug/l	1.70	1,548,389.67	4.903E+00	Pulse	0.50	3
Zn			1	51.631	ug/l	0.54	185,092.22	3.828E-01	Pulse	1.00	3
Cd			1	50.965	ug/l	0.66	346,519.17	7.166E-01	Pulse	0.50	3
Al			1	4852.774	ug/l	1.37	1,315,976.54	3.490E+00	Pulse	1.00	3
Se			1	47.340	ug/l	1.45	6,946.04	2.594E-01	Pulse	3.00	3
Sb			1	49.612	ug/l	0.23	657,138.38	1.359E+00	Pulse	1.00	3
Se			1	46.979	ug/l	1.71	3,506.88	1.310E-01	Pulse	3.00	3

ISTD Table

Tune	Element	Mass	CPS	RSD(%)	ISTD Recovery%	Det	Time(sec)	Rep
1	Bi		11,154,596.33	0.28	95.4	Analog	0.50	3
1	Sc		377,110.22	1.50	90.2	Pulse	0.30	3
1	Ge		315,812.18	1.14	90.7	Pulse	0.30	3

Quantitation Report

Tune	Element	Mass	CPS	RSD(%)	ISTD Recovery%	Det	Time(sec)	Rep
1	In		3,269,367.51	0.43	91.1	Pulse	0.30	3
1	Tb		15,041,062.67	0.96	97.4	Analog	0.50	3
1	Lu		8,854,561.67	0.55	97.8	Analog	0.50	3
1	Ge		483,564.83	0.64	90.9	Pulse	0.30	3
1	Te		26,780.91	1.28	88.1	Pulse	0.50	3
1	Li		2,905.78	4.94	86.0	Pulse	0.30	3

Quantitation Report

File Name 031_CCV.d
File Path D:\2018\05-May\x\050718m1.b
Method File
Method Path
Acq Time 5/7/2018 11:57
Sample Name CCV
Sample Type CCV
Comment =std 5
Prep Dilution 1.000
Auto Dilution N/A
Total Dilution 1.000
Operator Name admin
Acq Mode Spectrum
Cal Title
Cal Type External Calibration
Last Calib 5/7/2018 10:39
Bkg File
Bkg Mode Count Subtraction except for ISTD
Interference File
FQ Blank File
VIS Fit Point to Point

Tune Step 1 **Tune File**

FullQuant Table

Element	Mass	ISTD	Tune	Conc	Units	RSD(%)	CPS	Ratio	Det	Time(sec)	Rep
Cr			1	99.585	ug/l	1.50	2,051,417.91	6.508E+00	Pulse	0.50	3
As			1	100.837	ug/l	1.65	209,534.46	6.647E-01	Pulse	1.00	3
Mo			1	98.598	ug/l	0.53	1,487,337.92	3.055E+00	Pulse	0.50	3
Pb			1	98.954	ug/l	0.93	9,078,704.33	8.366E-01	Analog	1.00	3
Be			1	101.497	ug/l	1.67	13,575.18	3.524E-02	Pulse	2.00	3
Ag			1	97.891	ug/l	0.35	5,713,227.17	1.174E+01	Pulse	0.50	3
Ba			1	99.257	ug/l	0.49	494,678.09	1.525E-01	Pulse	0.50	3
Tl			1	98.067	ug/l	1.64	13,450,618.00	1.240E+00	Analog	0.50	3
Sn			1	100.416	ug/l	0.15	1,215,736.13	3.749E-01	Pulse	0.30	3
Sr			1	99.716	ug/l	0.29	977,159.10	3.013E-01	Pulse	0.50	3
[Pb]			1	95.260	ug/l	0.58	4,077,024.92	3.757E-01	Pulse	0.50	3
Ca			1	9821.912	ug/l	1.47	425,065.01	1.104E+00	Pulse	0.50	3
Ti			1	99.610	ug/l	0.95	35,509.41	9.218E-02	Pulse	0.50	3
Na			1	9986.261	ug/l	1.18	23,500,939.33	6.101E+01	Analog	1.00	3
Mg			1	9985.333	ug/l	1.41	10,130,227.33	2.630E+01	Analog	1.00	3
K			1	10021.146	ug/l	1.63	7,588,547.67	1.970E+01	Analog	1.00	3
V			1	98.878	ug/l	1.53	1,490,417.63	3.869E+00	Pulse	0.50	3
Mn			1	99.127	ug/l	2.12	882,864.04	2.801E+00	Pulse	0.50	3
Fe			1	10201.444	ug/l	2.23	165,817,664.00	5.260E+02	Analog	0.50	3
Co			1	99.254	ug/l	1.88	3,876,809.42	1.230E+01	Pulse	0.50	3
Ni			1	101.414	ug/l	1.97	1,085,423.87	3.443E+00	Pulse	0.50	3
Cu			1	101.628	ug/l	1.71	3,046,847.58	9.665E+00	Pulse	0.50	3
Zn			1	100.752	ug/l	0.36	361,602.52	7.428E-01	Pulse	1.00	3
Cd			1	99.792	ug/l	0.45	683,026.46	1.403E+00	Pulse	0.50	3
Al			1	9735.899	ug/l	1.34	2,696,687.50	7.001E+00	Pulse	1.00	3
Se			1	96.382	ug/l	1.22	13,779.51	5.273E-01	Pulse	3.00	3
Sb			1	98.155	ug/l	0.18	1,308,625.83	2.688E+00	Pulse	1.00	3
Se			1	97.788	ug/l	1.02	7,090.65	2.714E-01	Pulse	3.00	3

ISTD Table

Tune	Element	Mass	CPS	RSD(%)	ISTD Recovery%	Det	Time(sec)	Rep
1	Bi		10,852,902.00	1.17	92.8	Analog	0.50	3
1	Sc		385,228.62	1.23	92.1	Pulse	0.30	3
1	Ge		315,286.44	1.62	90.6	Pulse	0.30	3
1	In		3,242,789.04	0.57	90.3	Pulse	0.30	3
1	Tb		15,026,910.67	0.65	97.3	Analog	0.50	3
1	Lu		8,854,254.33	1.02	97.8	Analog	0.50	3

Quantitation Report

Tune	Element	Mass	CPS	RSD(%)	ISTD Recovery%	Det	Time(sec)	Rep
1	Ge		486,786.70	0.49	91.5	Pulse	0.30	3
1	Te		26,133.32	1.78	85.9	Pulse	0.50	3
1	Li		2,962.46	2.53	87.7	Pulse	0.30	3

Quantitation Report

File Name 032_CCB.d
File Path D:\2018\05-May\x050718m1.b
Method File
Method Path
Acq Time 5/7/2018 12:01
Sample Name CCB
Sample Type CCB
Comment
Prep Dilution 1.000
Auto Dilution N/A
Total Dilution 1.000
Operator Name admin
Acq Mode Spectrum
Cal Title
Cal Type External Calibration
Last Calib 5/7/2018 10:39
Bkg File
Bkg Mode Count Subtraction except for ISTD
Interference File
FQ Blank File
VIS Fit Point to Point

Tune Step **Tune File**
 1

FullQuant Table

Element	Mass	ISTD	Tune	Conc	Units	RSD(%)	CPS	Ratio	Det	Time(sec)	Rep
Cr			1	0.671	ug/l	1.97	15,268.01	4.746E-02	Pulse	0.50	3
As			1	0.004	ug/l	36.79	29.33	9.122E-05	Pulse	1.00	3
Mo			1	0.034	ug/l	12.66	542.68	1.094E-03	Pulse	0.50	3
Pb			1	0.006	ug/l	28.16	3,973.13	3.427E-04	Pulse	1.00	3
Be			1	0.011	ug/l	50.09	1.67	4.375E-06	Pulse	2.00	3
Ag			1	0.010	ug/l	14.00	644.68	1.301E-03	Pulse	0.50	3
Ba			1	0.014	ug/l	25.02	94.00	2.816E-05	Pulse	0.50	3
Tl			1	0.030	ug/l	12.61	4,546.63	3.922E-04	Pulse	0.50	3
Sn			1	0.030	ug/l	11.93	1,301.16	3.899E-04	Pulse	0.30	3
Sr			1	0.055	ug/l	1.79	1,784.76	5.348E-04	Pulse	0.50	3
[Pb]			1	0.007	ug/l	21.29	1,942.79	1.676E-04	Pulse	0.50	3
Ca			1	3.315	ug/l	8.92	319.33	8.390E-04	Pulse	0.50	3
Tl			1	0.023	ug/l	61.88	9.33	2.450E-05	Pulse	0.50	3
Na			1	4.320	ug/l	2.66	19,711.67	5.178E-02	Pulse	1.00	3
Mg			1	1.935	ug/l	1.16	2,271.80	5.968E-03	Pulse	1.00	3
K			1	3.377	ug/l	3.76	14,306.17	3.758E-02	Pulse	1.00	3
V			1	-0.009	ug/l	-26.51	488.01	1.282E-03	Pulse	0.50	3
Mn			1	1.021	ug/l	1.84	10,663.62	3.315E-02	Pulse	0.50	3
Fe			1	2.412	ug/l	7.18	79,883.85	2.484E-01	Pulse	0.50	3
Co			1	0.009	ug/l	10.60	434.68	1.352E-03	Pulse	0.50	3
Ni			1	0.195	ug/l	7.39	3,356.31	1.043E-02	Pulse	0.50	3
Cu			1	-0.007	ug/l	-55.91	15,902.57	4.943E-02	Pulse	0.50	3
Zn			1	0.206	ug/l	10.72	2,872.88	5.794E-03	Pulse	1.00	3
Cd			1	0.007	ug/l	27.31	52.67	1.062E-04	Pulse	0.50	3
Al			1	32.094	ug/l	0.44	9,164.44	2.408E-02	Pulse	1.00	3
Se			1	0.006	ug/l	126.78	22.22	7.785E-04	Pulse	3.00	3
Sb			1	0.015	ug/l	15.50	382.34	7.712E-04	Pulse	1.00	3
Se			1	-0.021	ug/l	-405.55	31.00	1.088E-03	Pulse	3.00	3

Quantitation Report

ISTD Table

Tune	Element	Mass	CPS	RSD(%)	ISTD Recovery%	Det	Time(sec)	Rep
1	Bi		11,592,498.00	0.23	99.1	Analog	0.50	3
1	Sc		380,645.32	0.27	91.0	Pulse	0.30	3
1	Ge		321,698.19	0.86	92.4	Pulse	0.30	3
1	In		3,337,036.54	0.24	92.9	Pulse	0.30	3
1	Tb		15,193,808.33	0.10	98.4	Analog	0.50	3
1	Lu		8,780,863.33	0.59	97.0	Analog	0.50	3
1	Ge		495,844.96	0.36	93.2	Pulse	0.30	3
1	Te		28,539.56	1.12	93.9	Pulse	0.50	3
1	Li		3,113.59	6.63	92.1	Pulse	0.30	3

Quantitation Report

File Name 033SMPL.d
File Path D:\2018\05-May\x\050718m1.b
Method File
Method Path
Acq Time 5/7/2018 12:04
Sample Name FA53625-12F
Sample Type Sample
Comment
Prep Dilution 2.000
Auto Dilution N/A
Total Dilution 2.000
Operator Name admin
Acq Mode Spectrum
Cal Title
Cal Type External Calibration
Last Calib 5/7/2018 10:39
Bkg File
Bkg Mode Count Subtraction except for ISTD
Interference File
FQ Blank File
VIS Fit Point to Point

Tune Step 1
Tune File

FullQuant Table

Element	Mass	ISTD	Tune	Conc	Units	RSD(%)	CPS	Ratio	Det	Time(sec)	Rep
Cr			1	19.398	ug/l	0.70	180,632.22	6.371E-01	Pulse	0.50	3
As			1	0.099	ug/l	5.85	110.67	3.903E-04	Pulse	1.00	3
Mo			1	0.543	ug/l	1.35	3,696.38	8.444E-03	Pulse	0.50	3
Pb			1	0.059	ug/l	7.40	5,678.62	5.404E-04	Pulse	1.00	3
Be			1	0.042	ug/l	60.36	2.67	7.673E-06	Pulse	2.00	3
Ag			1	0.025	ug/l	11.90	714.68	1.633E-03	Pulse	0.50	3
Ba			1	10.954	ug/l	1.99	25,558.03	8.424E-03	Pulse	0.50	3
Tl			1	0.032	ug/l	12.53	2,273.50	2.164E-04	Pulse	0.50	3
Sn			1	0.667	ug/l	10.33	4,616.17	1.522E-03	Pulse	0.30	3
Sr			1	90.095	ug/l	1.18	413,655.64	1.363E-01	Pulse	0.50	3
[Pb]			1	0.064	ug/l	12.52	2,786.90	2.652E-04	Pulse	0.50	3
Ca			1	23679.067	ug/l	1.16	462,079.94	1.330E+00	Pulse	0.50	3
Ti			1	0.503	ug/l	39.00	82.00	2.361E-04	Pulse	0.50	3
Na			1	26227.253	ug/l	0.71	27,830,496.67	8.011E+01	Analog	1.00	3
Mg			1	7120.146	ug/l	0.67	3,257,681.50	9.377E+00	Pulse	1.00	3
K			1	2218.638	ug/l	0.37	767,221.90	2.208E+00	Pulse	1.00	3
V			1	0.259	ug/l	0.07	2,330.82	6.709E-03	Pulse	0.50	3
Mn			1	19.363	ug/l	1.67	78,677.38	2.775E-01	Pulse	0.50	3
Fe			1	158.933	ug/l	1.40	1,196,765.91	4.221E+00	Pulse	0.50	3
Co			1	0.771	ug/l	3.86	13,594.80	4.795E-02	Pulse	0.50	3
Ni			1	22.337	ug/l	0.90	108,480.85	3.826E-01	Pulse	0.50	3
Cu			1	1.784	ug/l	1.37	38,115.51	1.344E-01	Pulse	0.50	3
Zn			1	4.158	ug/l	0.91	8,546.90	1.953E-02	Pulse	1.00	3
Cd			1	0.049	ug/l	15.52	152.67	3.488E-04	Pulse	0.50	3
Al			1	27.370	ug/l	3.42	3,766.03	1.084E-02	Pulse	1.00	3
Se			1	0.280	ug/l	20.71	29.56	1.510E-03	Pulse	3.00	3
Sb			1	0.101	ug/l	10.25	757.02	1.729E-03	Pulse	1.00	3
Se			1	0.818	ug/l	13.43	44.56	2.276E-03	Pulse	3.00	3

ISTD Table

Tune	Element	Mass	CPS	RSD(%)	ISTD Recovery%	Det	Time(sec)	Rep
1	Bi		10,509,303.33	0.47	89.9	Analog	0.50	3
1	Sc		347,406.63	0.14	83.1	Pulse	0.30	3
1	Ge		283,546.38	0.48	81.4	Pulse	0.30	3
1	In		3,034,335.36	0.84	84.5	Pulse	0.30	3
1	Tb		14,535,509.00	0.67	94.1	Analog	0.50	3
1	Lu		8,546,083.00	0.84	94.4	Analog	0.50	3

Quantitation Report

Tune	Element	Mass	CPS	RSD(%)	ISTD Recovery%	Det	Time(sec)	Rep
1	Ge		437,736.18	0.04	82.3	Pulse	0.30	3
1	Te		19,574.47	0.31	64.4	Pulse	0.50	3
1	Li		2,830.21	5.11	83.8	Pulse	0.30	3

Quantitation Report

File Name 034SMPL.d
File Path D:\2018\05-May\x\050718m1.b
Method File
Method Path
Acq Time 5/7/2018 12:08
Sample Name FA53625-13F
Sample Type Sample
Comment
Prep Dilution 2.000
Auto Dilution N/A
Total Dilution 2.000
Operator Name admin
Acq Mode Spectrum
Cal Title
Cal Type External Calibration
Last Calib 5/7/2018 10:39
Bkg File
Bkg Mode Count Subtraction except for ISTD
Interference File
FQ Blank File
VIS Fit Point to Point

Tune Step **Tune File**
 1

FullQuant Table

Element	Mass	ISTD	Tune	Conc	Units	RSD(%)	CPS	Ratio	Det	Time(sec)	Rep
Cr			1	2.812	ug/l	2.37	27,253.72	9.544E-02	Pulse	0.50	3
As			1	0.493	ug/l	7.11	482.68	1.690E-03	Pulse	1.00	3
Mo			1	0.590	ug/l	2.01	4,015.78	9.173E-03	Pulse	0.50	3
Pb			1	0.132	ug/l	3.30	8,910.00	8.486E-04	Pulse	1.00	3
Be			1	0.067	ug/l	40.47	4.17	1.194E-05	Pulse	2.00	3
Ag			1	0.014	ug/l	8.75	429.34	9.807E-04	Pulse	0.50	3
Ba			1	31.411	ug/l	0.42	73,419.31	2.414E-02	Pulse	0.50	3
Tl			1	0.105	ug/l	2.71	7,082.82	6.745E-04	Pulse	0.50	3
Sn			1	0.490	ug/l	5.37	3,620.39	1.191E-03	Pulse	0.30	3
Sr			1	60.415	ug/l	0.36	278,387.36	9.154E-02	Pulse	0.50	3
[Pb]			1	0.140	ug/l	1.02	4,363.24	4.155E-04	Pulse	0.50	3
Ca			1	27233.492	ug/l	0.95	534,374.08	1.530E+00	Pulse	0.50	3
Ti			1	1.564	ug/l	3.55	254.00	7.270E-04	Pulse	0.50	3
Na			1	29557.674	ug/l	1.33	31,537,276.67	9.028E+01	Analog	1.00	3
Mg			1	7198.186	ug/l	1.35	3,311,628.50	9.480E+00	Pulse	1.00	3
K			1	1637.926	ug/l	1.07	572,382.54	1.638E+00	Pulse	1.00	3
V			1	0.341	ug/l	2.73	2,904.89	8.316E-03	Pulse	0.50	3
Mn			1	1517.682	ug/l	0.78	6,114,790.33	2.141E+01	Analog	0.50	3
Fe			1	317.043	ug/l	0.68	2,369,270.58	8.296E+00	Pulse	0.50	3
Co			1	18.965	ug/l	0.51	335,599.38	1.175E+00	Pulse	0.50	3
Ni			1	6.807	ug/l	0.97	34,053.23	1.192E-01	Pulse	0.50	3
Cu			1	0.713	ug/l	3.70	23,933.49	8.381E-02	Pulse	0.50	3
Zn			1	6.355	ug/l	1.17	12,072.78	2.758E-02	Pulse	1.00	3
Cd			1	0.258	ug/l	4.86	798.69	1.824E-03	Pulse	0.50	3
Al			1	25.231	ug/l	1.72	3,518.32	1.007E-02	Pulse	1.00	3
Se			1	0.143	ug/l	36.29	22.56	1.136E-03	Pulse	3.00	3
Sb			1	0.079	ug/l	9.01	630.68	1.441E-03	Pulse	1.00	3
Se			1	0.665	ug/l	22.14	41.00	2.064E-03	Pulse	3.00	3

ISTD Table

Tune	Element	Mass	CPS	RSD(%)	ISTD Recovery%	Det	Time(sec)	Rep
1	Bi		10,500,389.33	0.39	89.8	Analog	0.50	3
1	Sc		349,349.55	0.63	83.5	Pulse	0.30	3
1	Ge		285,578.96	0.22	82.0	Pulse	0.30	3
1	In		3,041,017.66	0.56	84.7	Pulse	0.30	3
1	Tb		14,649,330.33	0.66	94.8	Analog	0.50	3
1	Lu		8,646,638.67	0.38	95.5	Analog	0.50	3

Quantitation Report

Tune	Element	Mass	CPS	RSD(%)	ISTD Recovery%	Det	Time(sec)	Rep
1	Ge		437,787.24	0.09	82.3	Pulse	0.30	3
1	Te		19,869.48	0.95	65.3	Pulse	0.50	3
1	Li		2,859.11	5.22	84.6	Pulse	0.30	3

Quantitation Report

File Name 035MPL.d
File Path D:\2018\05-May\x\050718m1.b
Method File
Method Path
Acq Time 5/7/2018 12:11
Sample Name FA53625-14F
Sample Type Sample
Comment
Prep Dilution 2.000
Auto Dilution N/A
Total Dilution 2.000
Operator Name admin
Acq Mode Spectrum
Cal Title
Cal Type External Calibration
Last Calib 5/7/2018 10:39
Bkg File
Bkg Mode Count Subtraction except for ISTD
Interference File
FQ Blank File
VIS Fit Point to Point

Tune Step **Tune File**
 1

FullQuant Table

Element	Mass	ISTD	Tune	Conc	Units	RSD(%)	CPS	Ratio	Det	Time(sec)	Rep
Cr			1	8.888	ug/l	0.30	84,265.51	2.939E-01	Pulse	0.50	3
As			1	0.130	ug/l	0.98	141.33	4.929E-04	Pulse	1.00	3
Mo			1	1.464	ug/l	1.83	9,981.35	2.271E-02	Pulse	0.50	3
Pb			1	0.036	ug/l	2.98	4,597.96	4.405E-04	Pulse	1.00	3
Be			1	0.014	ug/l	115.72	1.00	2.831E-06	Pulse	2.00	3
Ag			1	0.009	ug/l	8.78	298.00	6.782E-04	Pulse	0.50	3
Ba			1	17.052	ug/l	0.28	39,843.69	1.311E-02	Pulse	0.50	3
Tl			1	0.017	ug/l	13.92	1,257.39	1.204E-04	Pulse	0.50	3
Sn			1	0.484	ug/l	4.06	3,583.71	1.179E-03	Pulse	0.30	3
Sr			1	84.988	ug/l	1.18	390,934.41	1.286E-01	Pulse	0.50	3
[Pb]			1	0.032	ug/l	2.62	2,118.14	2.029E-04	Pulse	0.50	3
Ca			1	34250.797	ug/l	1.06	678,761.87	1.924E+00	Pulse	0.50	3
Ti			1	0.798	ug/l	13.23	131.33	3.724E-04	Pulse	0.50	3
Na			1	37635.657	ug/l	0.46	40,558,002.67	1.149E+02	Analog	1.00	3
Mg			1	9221.093	ug/l	0.54	4,284,898.50	1.214E+01	Pulse	1.00	3
K			1	7115.370	ug/l	0.40	2,474,983.50	7.014E+00	Pulse	1.00	3
V			1	0.239	ug/l	4.94	2,234.81	6.333E-03	Pulse	0.50	3
Mn			1	82.331	ug/l	0.10	334,251.36	1.166E+00	Pulse	0.50	3
Fe			1	65.630	ug/l	4.25	520,658.09	1.816E+00	Pulse	0.50	3
Co			1	2.195	ug/l	1.71	39,057.90	1.362E-01	Pulse	0.50	3
Ni			1	395.963	ug/l	0.60	1,926,501.50	6.718E+00	Pulse	0.50	3
Cu			1	2.254	ug/l	2.09	44,929.36	1.567E-01	Pulse	0.50	3
Zn			1	5.763	ug/l	4.15	11,164.24	2.541E-02	Pulse	1.00	3
Cd			1	0.051	ug/l	21.97	159.33	3.625E-04	Pulse	0.50	3
Al			1	15.378	ug/l	6.95	2,304.14	6.530E-03	Pulse	1.00	3
Se			1	0.235	ug/l	3.62	26.66	1.387E-03	Pulse	3.00	3
Sb			1	0.121	ug/l	6.16	883.36	2.010E-03	Pulse	1.00	3
Se			1	0.470	ug/l	70.10	34.44	1.795E-03	Pulse	3.00	3

ISTD Table

Tune	Element	Mass	CPS	RSD(%)	ISTD Recovery%	Det	Time(sec)	Rep
1	Bi		10,439,193.67	0.92	89.3	Analog	0.50	3
1	Sc		352,853.57	0.68	84.4	Pulse	0.30	3
1	Ge		286,743.02	0.44	82.4	Pulse	0.30	3
1	In		3,039,337.24	0.25	84.7	Pulse	0.30	3
1	Tb		14,675,973.67	1.14	95.0	Analog	0.50	3
1	Lu		8,612,400.33	0.49	95.2	Analog	0.50	3

Quantitation Report

Tune	Element	Mass	CPS	RSD(%)	ISTD Recovery%	Det	Time(sec)	Rep
1	Ge		439,433.21	0.10	82.6	Pulse	0.30	3
1	Te		19,220.78	1.45	63.2	Pulse	0.50	3
1	Li		2,915.79	4.32	86.3	Pulse	0.30	3

Quantitation Report

File Name 036SMPL.d
File Path D:\2018\05-May\x\050718m1.b
Method File
Method Path
Acq Time 5/7/2018 12:15
Sample Name FA53625-15F
Sample Type Sample
Comment
Prep Dilution 2.000
Auto Dilution N/A
Total Dilution 2.000
Operator Name admin
Acq Mode Spectrum
Cal Title
Cal Type External Calibration
Last Calib 5/7/2018 10:39
Bkg File
Bkg Mode Count Subtraction except for ISTD
Interference File
FQ Blank File
VIS Fit Point to Point

Tune Step **Tune File**
 1

FullQuant Table

Element	Mass	ISTD	Tune	Conc	Units	RSD(%)	CPS	Ratio	Det	Time(sec)	Rep
Cr			1	22.431	ug/l	0.84	211,402.03	7.361E-01	Pulse	0.50	3
As			1	0.105	ug/l	8.31	117.67	4.097E-04	Pulse	1.00	3
Mo			1	0.483	ug/l	1.69	3,310.31	7.517E-03	Pulse	0.50	3
Pb			1	0.111	ug/l	5.32	7,910.84	7.574E-04	Pulse	1.00	3
Be			1	0.019	ug/l	87.03	1.33	3.741E-06	Pulse	2.00	3
Ag			1	0.009	ug/l	17.16	298.67	6.784E-04	Pulse	0.50	3
Ba			1	20.891	ug/l	0.53	48,940.56	1.606E-02	Pulse	0.50	3
Tl			1	0.010	ug/l	18.31	778.69	7.455E-05	Pulse	0.50	3
Sn			1	0.512	ug/l	1.49	3,752.62	1.231E-03	Pulse	0.30	3
Sr			1	314.281	ug/l	0.10	1,446,458.00	4.747E-01	Pulse	0.50	3
[Pb]			1	0.104	ug/l	8.49	3,592.39	3.439E-04	Pulse	0.50	3
Ca			1	33068.438	ug/l	0.47	660,849.85	1.857E+00	Pulse	0.50	3
Ti			1	0.191	ug/l	18.55	32.67	9.184E-05	Pulse	0.50	3
Na			1	35049.360	ug/l	0.65	38,088,109.33	1.070E+02	Analog	1.00	3
Mg			1	8933.540	ug/l	0.29	4,186,151.58	1.177E+01	Pulse	1.00	3
K			1	3270.996	ug/l	0.10	1,153,271.50	3.241E+00	Pulse	1.00	3
V			1	0.252	ug/l	1.03	2,338.81	6.573E-03	Pulse	0.50	3
Mn			1	19.735	ug/l	0.94	81,193.62	2.827E-01	Pulse	0.50	3
Fe			1	156.679	ug/l	0.75	1,195,478.83	4.163E+00	Pulse	0.50	3
Co			1	0.706	ug/l	3.23	12,615.46	4.393E-02	Pulse	0.50	3
Ni			1	14.793	ug/l	0.85	73,140.64	2.547E-01	Pulse	0.50	3
Cu			1	2.114	ug/l	2.51	43,088.55	1.500E-01	Pulse	0.50	3
Zn			1	7.590	ug/l	0.67	14,137.85	3.210E-02	Pulse	1.00	3
Cd			1	0.206	ug/l	5.06	640.68	1.455E-03	Pulse	0.50	3
Al			1	11.186	ug/l	2.57	1,787.08	5.022E-03	Pulse	1.00	3
Se			1	0.162	ug/l	60.62	23.44	1.189E-03	Pulse	3.00	3
Sb			1	0.078	ug/l	8.13	624.34	1.418E-03	Pulse	1.00	3
Se			1	0.574	ug/l	41.58	38.22	1.939E-03	Pulse	3.00	3

ISTD Table

Tune	Element	Mass	CPS	RSD(%)	ISTD Recovery%	Det	Time(sec)	Rep
1	Bi		10,445,121.67	0.05	89.3	Analog	0.50	3
1	Sc		355,809.93	0.36	85.1	Pulse	0.30	3
1	Ge		287,197.01	0.78	82.5	Pulse	0.30	3
1	In		3,047,379.05	0.49	84.9	Pulse	0.30	3
1	Tb		14,730,832.67	0.38	95.4	Analog	0.50	3
1	Lu		8,659,437.00	0.88	95.7	Analog	0.50	3

Quantitation Report

Tune	Element	Mass	CPS	RSD(%)	ISTD Recovery%	Det	Time(sec)	Rep
1	Ge		440,374.13	0.35	82.8	Pulse	0.30	3
1	Te		19,771.37	2.47	65.0	Pulse	0.50	3
1	Li		2,821.32	6.16	83.5	Pulse	0.30	3

Quantitation Report

File Name 037SMPL.d
File Path D:\2018\05-May\x\050718m1.b
Method File
Method Path
Acq Time 5/7/2018 12:19
Sample Name FA53625-16F
Sample Type Sample
Comment
Prep Dilution 2.000
Auto Dilution N/A
Total Dilution 2.000
Operator Name admin
Acq Mode Spectrum
Cal Title
Cal Type External Calibration
Last Calib 5/7/2018 10:39
Bkg File
Bkg Mode Count Subtraction except for ISTD
Interference File
FQ Blank File
VIS Fit Point to Point

Tune Step 1
Tune File

FullQuant Table

Element	Mass	ISTD	Tune	Conc	Units	RSD(%)	CPS	Ratio	Det	Time(sec)	Rep	
Cr			1	0.516	ug/l	3.13	5,758.87	2.048E-02	Pulse	0.50	3	
As			1	1.608	ug/l	4.99	1,508.73	5.363E-03	Pulse	1.00	3	
Mo			1	3.657	ug/l	0.96	24,397.88	5.670E-02	Pulse	0.50	3	
Pb			1	0.257	ug/l	1.33	14,202.90	1.374E-03	Pulse	1.00	3	
Be			1	0.020	ug/l	23.23		1.33	3.850E-06	Pulse	2.00	3
Ag			1	0.010	ug/l	6.98	312.00	7.253E-04	Pulse	0.50	3	
Ba			1	52.027	ug/l	1.15	119,797.65	3.998E-02	Pulse	0.50	3	
Tl			1	0.006	ug/l	22.43	489.34	4.732E-05	Pulse	0.50	3	
Sn			1	0.440	ug/l	3.67	3,290.32	1.098E-03	Pulse	0.30	3	
Sr			1	223.719	ug/l	0.33	1,012,628.40	3.380E-01	Pulse	0.50	3	
[Pb]			1	0.248	ug/l	3.37	6,493.25	6.282E-04	Pulse	0.50	3	
Ca			1	55504.669	ug/l	0.95	1,078,182.13	3.117E+00	Pulse	0.50	3	
Ti			1	0.301	ug/l	34.81	49.33	1.426E-04	Pulse	0.50	3	
Na			1	22240.181	ug/l	1.27	23,497,146.67	6.794E+01	Analog	1.00	3	
Mg			1	7220.306	ug/l	0.78	3,289,181.08	9.509E+00	Pulse	1.00	3	
K			1	15405.285	ug/l	1.44	5,240.072.00	1.515E+01	Analog	1.00	3	
V			1	0.206	ug/l	4.50	1,968.11	5.690E-03	Pulse	0.50	3	
Mn			1	362.218	ug/l	0.66	1,438,353.92	5.114E+00	Pulse	0.50	3	
Fe			1	570.777	ug/l	1.89	4,172,869.08	1.484E-01	Pulse	0.50	3	
Co			1	0.105	ug/l	4.38	1,888.77	6.714E-03	Pulse	0.50	3	
Ni			1	1.572	ug/l	2.28	8,569.92	3.047E-02	Pulse	0.50	3	
Cu			1	0.950	ug/l	4.15	26,711.77	9.498E-02	Pulse	0.50	3	
Zn			1	4.064	ug/l	4.68	8,250.77	1.918E-02	Pulse	1.00	3	
Cd			1	0.055	ug/l	17.62	170.00	3.952E-04	Pulse	0.50	3	
Al			1	10.734	ug/l	3.93	1,680.74	4.860E-03	Pulse	1.00	3	
Se			1	0.025	ug/l	100.42		15.66	8.135E-04	Pulse	3.00	3
Sb			1	0.063	ug/l	12.02	521.34	1.212E-03	Pulse	1.00	3	
Se			1	0.519	ug/l	3.88	35.89	1.862E-03	Pulse	3.00	3	

ISTD Table

Tune	Element	Mass	CPS	RSD(%)	ISTD Recovery%	Det	Time(sec)	Rep	
1	Bi		10,337,146.33	0.39		88.4	Analog	0.50	3
1	Sc		345,909.30	1.22		82.7	Pulse	0.30	3
1	Ge		281,291.51	1.31		80.8	Pulse	0.30	3
1	In		2,996,049.81	0.52		83.4	Pulse	0.30	3
1	Tb		14,499,075.67	0.21		93.9	Analog	0.50	3
1	Lu		8,572,965.00	0.85		94.7	Analog	0.50	3

Quantitation Report

Tune	Element	Mass	CPS	RSD(%)	ISTD Recovery%	Det	Time(sec)	Rep
1	Ge		430,302.77	0.95	80.9	Pulse	0.30	3
1	Te		19,270.82	1.07	63.4	Pulse	0.50	3
1	Li		2,779.09	2.33	82.2	Pulse	0.30	3

Quantitation Report

File Name 038SMPL.d
File Path D:\2018\05-May\x050718m1.b
Method File
Method Path
Acq Time 5/7/2018 12:22
Sample Name FA53625-17F
Sample Type Sample
Comment
Prep Dilution 2.000
Auto Dilution N/A
Total Dilution 2.000
Operator Name admin
Acq Mode Spectrum
Cal Title
Cal Type External Calibration
Last Calib 5/7/2018 10:39
Bkg File
Bkg Mode Count Subtraction except for ISTD
Interference File
FQ Blank File
VIS Fit Point to Point

Tune Step	Tune File
1	

FullQuant Table

Element	Mass	ISTD	Tune	Conc	Units	RSD(%)	CPS	Ratio	Det	Time(sec)	Rep
Cr			1	14.676	ug/l	1.57	136,718.93	4.829E-01	Pulse	0.50	3
As			1	0.089	ug/l	20.83	101.33	3.577E-04	Pulse	1.00	3
Mo			1	0.906	ug/l	1.89	6,101.01	1.408E-02	Pulse	0.50	3
Pb			1	0.035	ug/l	11.67	4,625.97	4.397E-04	Pulse	1.00	3
Be			1	0.017	ug/l	156.26	1.17	3.407E-06	Pulse	2.00	3
Ag			1	0.008	ug/l	7.88	252.67	5.833E-04	Pulse	0.50	3
Ba			1	8.644	ug/l	2.30	19,882.27	6.648E-03	Pulse	0.50	3
Tl			1	0.005	ug/l	17.28	449.34	4.271E-05	Pulse	0.50	3
Sn			1	0.419	ug/l	7.84	3,162.52	1.058E-03	Pulse	0.30	3
Sr			1	84.580	ug/l	1.34	382,818.43	1.280E-01	Pulse	0.50	3
[Pb]			1	0.039	ug/l	16.49	2,264.83	2.153E-04	Pulse	0.50	3
Ca			1	19960.077	ug/l	0.94	387,136.18	1.121E+00	Pulse	0.50	3
Ti			1	0.240	ug/l	35.92	39.33	1.141E-04	Pulse	0.50	3
Na			1	27071.755	ug/l	1.10	28,549,328.00	8.269E+01	Analog	1.00	3
Mg			1	5339.527	ug/l	0.81	2,428,049.58	7.032E+00	Pulse	1.00	3
K			1	1767.409	ug/l	0.90	609,594.36	1.766E+00	Pulse	1.00	3
V			1	0.310	ug/l	10.99	2,664.86	7.722E-03	Pulse	0.50	3
Mn			1	6.870	ug/l	2.05	28,669.80	1.013E-01	Pulse	0.50	3
Fe			1	68.580	ug/l	3.40	535,560.62	1.892E+00	Pulse	0.50	3
Co			1	0.319	ug/l	2.68	5,644.18	1.993E-02	Pulse	0.50	3
Ni			1	16.402	ug/l	1.50	79,834.17	2.820E-01	Pulse	0.50	3
Cu			1	1.096	ug/l	3.22	28,858.17	1.019E-01	Pulse	0.50	3
Zn			1	5.672	ug/l	1.45	10,863.07	2.507E-02	Pulse	1.00	3
Cd			1	0.014	ug/l	17.60	47.33	1.093E-04	Pulse	0.50	3
Al			1	13.896	ug/l	5.09	2,070.11	5.997E-03	Pulse	1.00	3
Se			1	0.208	ug/l	31.15	25.56	1.313E-03	Pulse	3.00	3
Sb			1	0.054	ug/l	9.62	472.68	1.091E-03	Pulse	1.00	3
Se			1	0.700	ug/l	12.90	41.11	2.113E-03	Pulse	3.00	3

ISTD Table

Tune	Element	Mass	CPS	RSD(%)	ISTD Recovery%	Det	Time(sec)	Rep
1	Bi		10,521,416.33	0.31	90.0	Analog	0.50	3
1	Sc		345,285.37	0.91	82.6	Pulse	0.30	3
1	Ge		283,179.57	1.44	81.3	Pulse	0.30	3
1	In		2,990,763.91	0.97	83.3	Pulse	0.30	3
1	Tb		14,607,508.00	0.49	94.6	Analog	0.50	3
1	Lu		8,576,114.00	0.33	94.8	Analog	0.50	3

Quantitation Report

Tune	Element	Mass	CPS	RSD(%)	ISTD Recovery%	Det	Time(sec)	Rep
1	Ge		433,260.20	0.46	81.5	Pulse	0.30	3
1	Te		19,458.38	0.14	64.0	Pulse	0.50	3
1	Li		2,851.33	2.43	84.4	Pulse	0.30	3

Quantitation Report

File Name 039SMPL.d
File Path D:\2018\05-May\x\050718m1.b
Method File
Method Path
Acq Time 5/7/2018 12:26
Sample Name FA53625-24F
Sample Type Sample
Comment
Prep Dilution 2.000
Auto Dilution N/A
Total Dilution 2.000
Operator Name admin
Acq Mode Spectrum
Cal Title
Cal Type External Calibration
Last Calib 5/7/2018 10:39
Bkg File
Bkg Mode Count Subtraction except for ISTD
Interference File
FQ Blank File
VIS Fit Point to Point

Tune Step **Tune File**
 1

FullQuant Table

Element	Mass	ISTD	Tune	Conc	Units	RSD(%)	CPS	Ratio	Det	Time(sec)	Rep
Cr			1	0.230	ug/l	5.58	3,227.61	1.114E-02	Pulse	0.50	3
As			1	0.051	ug/l	12.05	67.00	2.313E-04	Pulse	1.00	3
Mo			1	0.026	ug/l	10.92	196.00	4.402E-04	Pulse	0.50	3
Pb			1	0.059	ug/l	3.63	5,959.04	5.388E-04	Pulse	1.00	3
Be			1	0.020	ug/l	64.07	1.33	3.820E-06	Pulse	2.00	3
Ag			1	0.391	ug/l	13.89	10,503.69	2.359E-02	Pulse	0.50	3
Ba			1	1.206	ug/l	2.81	2,882.90	9.336E-04	Pulse	0.50	3
Tl			1	0.004	ug/l	12.07	416.68	3.768E-05	Pulse	0.50	3
Sn			1	0.441	ug/l	3.58	3,395.89	1.100E-03	Pulse	0.30	3
Sr			1	0.803	ug/l	2.43	4,883.99	1.582E-03	Pulse	0.50	3
[Pb]			1	0.055	ug/l	6.63	2,737.57	2.475E-04	Pulse	0.50	3
Ca			1	230.158	ug/l	4.03	4,683.90	1.339E-02	Pulse	0.50	3
Ti			1	0.117	ug/l	29.11	20.00	5.727E-05	Pulse	0.50	3
Na			1	970.706	ug/l	1.60	1,045,786.88	2.989E+00	Pulse	1.00	3
Mg			1	35.201	ug/l	0.77	16,522.14	4.723E-02	Pulse	1.00	3
K			1	15.697	ug/l	5.00	16,219.32	4.636E-02	Pulse	1.00	3
V			1	0.168	ug/l	2.46	1,728.08	4.939E-03	Pulse	0.50	3
Mn			1	1.286	ug/l	0.90	6,517.78	2.249E-02	Pulse	0.50	3
Fe			1	3.622	ug/l	3.49	62,994.25	2.174E-01	Pulse	0.50	3
Co			1	0.017	ug/l	21.36	363.34	1.254E-03	Pulse	0.50	3
Ni			1	-0.016	ug/l	-70.59	1,027.37	3.546E-03	Pulse	0.50	3
Cu			1	2.917	ug/l	1.62	54,491.17	1.880E-01	Pulse	0.50	3
Zn			1	1.431	ug/l	1.08	4,245.47	9.531E-03	Pulse	1.00	3
Cd			1	0.010	ug/l	29.52	33.33	7.475E-05	Pulse	0.50	3
Al			1	6.014	ug/l	1.76	1,106.70	3.163E-03	Pulse	1.00	3
Se			1	0.027	ug/l	50.60	16.22	8.195E-04	Pulse	3.00	3
Sb			1	0.063	ug/l	8.23	544.01	1.221E-03	Pulse	1.00	3
Se			1	0.320	ug/l	35.03	31.44	1.587E-03	Pulse	3.00	3

ISTD Table

Tune Element	Mass	CPS	RSD(%)	ISTD Recovery%	Det	Time(sec)	Rep
1 Bi		11,059,450.33	0.38	94.6	Analog	0.50	3

Quantitation Report

Tune	Element	Mass	CPS	RSD(%)	ISTD Recovery%	Det	Time(sec)	Rep
1	Sc		349,863.97	1.00	83.7	Pulse	0.30	3
1	Ge		289,780.60	0.41	83.2	Pulse	0.30	3
1	In		3,087,941.20	0.23	86.0	Pulse	0.30	3
1	Tb		14,798,351.67	0.78	95.8	Analog	0.50	3
1	Lu		8,712,067.00	0.83	96.3	Analog	0.50	3
1	Ge		445,454.01	0.74	83.7	Pulse	0.30	3
1	Te		19,793.38	1.40	65.1	Pulse	0.50	3
1	Li		2,922.45	1.82	86.5	Pulse	0.30	3

Quantitation Report

File Name 040SMPL.d
File Path D:\2018\05-May\x\050718m1.b
Method File
Method Path
Acq Time 5/7/2018 12:30
Sample Name FA53627-1
Sample Type Sample
Comment
Prep Dilution 2.000
Auto Dilution N/A
Total Dilution 2.000
Operator Name admin
Acq Mode Spectrum
Cal Title
Cal Type External Calibration
Last Calib 5/7/2018 10:39
Bkg File
Bkg Mode Count Subtraction except for ISTD
Interference File
FQ Blank File
VIS Fit Point to Point

Tune Step **Tune File**
 1

FullQuant Table

Element	Mass	ISTD	Tune	Conc	Units	RSD(%)	CPS	Ratio	Det	Time(sec)	Rep
Cr			1	0.816	ug/l	1.09	8,610.59	3.026E-02	Pulse	0.50	3
As			1	0.130	ug/l	4.57	139.67	4.909E-04	Pulse	1.00	3
Mo			1	0.146	ug/l	4.27	998.03	2.307E-03	Pulse	0.50	3
Pb			1	0.228	ug/l	0.69	13,362.22	1.255E-03	Pulse	1.00	3
Be			1	0.051	ug/l	25.76	3.17	9.179E-06	Pulse	2.00	3
Ag			1	0.032	ug/l	5.95	899.36	2.078E-03	Pulse	0.50	3
Ba			1	25.128	ug/l	0.68	58,328.16	1.932E-02	Pulse	0.50	3
Tl			1	0.018	ug/l	9.50	1,346.73	1.265E-04	Pulse	0.50	3
Sn			1	0.671	ug/l	21.72	4,619.02	1.529E-03	Pulse	0.30	3
Sr			1	208.101	ug/l	1.00	949,461.40	3.144E-01	Pulse	0.50	3
[Pb]			1	0.234	ug/l	2.17	6,391.22	6.004E-04	Pulse	0.50	3
Ca			1	19029.211	ug/l	1.32	369,122.26	1.069E+00	Pulse	0.50	3
Ti			1	2.486	ug/l	11.57	398.01	1.153E-03	Pulse	0.50	3
Na			1	9608.017	ug/l	1.19	10,139,138.00	2.936E+01	Analog	1.00	3
Mg			1	2786.168	ug/l	1.03	1,267,225.75	3.670E+00	Pulse	1.00	3
K			1	1214.735	ug/l	1.46	422,353.51	1.223E+00	Pulse	1.00	3
V			1	0.229	ug/l	8.56	2,118.79	6.135E-03	Pulse	0.50	3
Mn			1	8.874	ug/l	1.62	36,852.81	1.295E-01	Pulse	0.50	3
Fe			1	69.857	ug/l	0.36	547,619.25	1.925E+00	Pulse	0.50	3
Co			1	0.186	ug/l	2.06	3,328.30	1.170E-02	Pulse	0.50	3
Ni			1	19.834	ug/l	1.80	96,780.06	3.402E-01	Pulse	0.50	3
Cu			1	16.690	ug/l	1.14	238,885.76	8.396E-01	Pulse	0.50	3
Zn			1	595.610	ug/l	0.78	946,547.94	2.187E+00	Pulse	1.00	3
Cd			1	5.312	ug/l	1.66	16,165.75	3.736E-02	Pulse	0.50	3
Al			1	73.247	ug/l	1.17	9,438.23	2.733E-02	Pulse	1.00	3
Se			1	0.275	ug/l	31.68	29.00	1.498E-03	Pulse	3.00	3
Sb			1	0.281	ug/l	5.65	1,814.76	4.194E-03	Pulse	1.00	3
Se			1	1.218	ug/l	25.21	54.78	2.829E-03	Pulse	3.00	3

ISTD Table

Tune	Element	Mass	CPS	RSD(%)	ISTD Recovery%	Det	Time(sec)	Rep
1	Bi		10,644,728.00	0.13	91.0	Analog	0.50	3
1	Sc		345,323.34	0.85	82.6	Pulse	0.30	3
1	Ge		284,522.10	0.33	81.7	Pulse	0.30	3
1	In		3,019,806.69	0.40	84.1	Pulse	0.30	3
1	Tb		14,603,371.67	0.25	94.6	Analog	0.50	3
1	Lu		8,573,439.33	0.68	94.7	Analog	0.50	3

Quantitation Report

Tune	Element	Mass	CPS	RSD(%)	ISTD Recovery%	Det	Time(sec)	Rep
1	Ge		432,747.32	0.39	81.4	Pulse	0.30	3
1	Te		19,380.27	1.68	63.7	Pulse	0.50	3
1	Li		2,780.21	4.34	82.3	Pulse	0.30	3

Quantitation Report

File Name 041SMPL.d
File Path D:\2018\05-May\x\050718m1.b
Method File
Method Path
Acq Time 5/7/2018 12:33
Sample Name MP33699-D2
Sample Type Sample
Comment
Prep Dilution 2.000
Auto Dilution N/A
Total Dilution 2.000
Operator Name admin
Acq Mode Spectrum
Cal Title
Cal Type External Calibration
Last Calib 5/7/2018 10:39
Bkg File
Bkg Mode Count Subtraction except for ISTD
Interference File
FQ Blank File
VIS Fit Point to Point

Tune Step **Tune File**
 1

FullQuant Table

Element	Mass	ISTD	Tune	Conc	Units	RSD(%)	CPS	Ratio	Det	Time(sec)	Rep
Cr			1	0.903	ug/l	2.64	9,278.23	3.31E-02	Pulse	0.50	3
As			1	0.116	ug/l	11.55	125.33	4.474E-04	Pulse	1.00	3
Mo			1	0.149	ug/l	2.08	1,010.70	2.350E-03	Pulse	0.50	3
Pb			1	0.177	ug/l	0.48	11,045.24	1.037E-03	Pulse	1.00	3
Be			1	0.076	ug/l	56.04	4.67	1.362E-05	Pulse	2.00	3
Ag			1	0.032	ug/l	11.72	885.36	2.058E-03	Pulse	0.50	3
Ba			1	26.431	ug/l	0.72	60,479.83	2.032E-02	Pulse	0.50	3
Tl			1	0.017	ug/l	6.01	1,298.06	1.219E-04	Pulse	0.50	3
Sn			1	0.664	ug/l	4.67	4,510.58	1.515E-03	Pulse	0.30	3
Sr			1	220.213	ug/l	0.62	990,349.65	3.327E-01	Pulse	0.50	3
[Pb]			1	0.179	ug/l	1.75	5,239.49	4.920E-04	Pulse	0.50	3
Ca			1	19876.843	ug/l	0.72	381,965.38	1.117E+00	Pulse	0.50	3
Ti			1	6.617	ug/l	5.79	1,048.70	3.065E-03	Pulse	0.50	3
Na			1	10030.848	ug/l	0.54	10,486,075.00	3.065E+01	Analog	1.00	3
Mg			1	2910.738	ug/l	0.15	1,311,498.50	3.834E+00	Pulse	1.00	3
K			1	1274.956	ug/l	0.43	438,638.29	1.282E+00	Pulse	1.00	3
V			1	0.342	ug/l	1.06	2,851.55	8.336E-03	Pulse	0.50	3
Mn			1	13.315	ug/l	4.05	53,859.73	1.922E-01	Pulse	0.50	3
Fe			1	83.447	ug/l	0.86	637,552.65	2.275E+00	Pulse	0.50	3
Co			1	0.204	ug/l	3.08	3,591.68	1.282E-02	Pulse	0.50	3
Ni			1	20.732	ug/l	1.17	99,586.91	3.554E-01	Pulse	0.50	3
Cu			1	15.987	ug/l	0.17	225,973.48	8.064E-01	Pulse	0.50	3
Zn			1	625.941	ug/l	0.87	988,777.31	2.298E+00	Pulse	1.00	3
Cd			1	5.623	ug/l	1.59	17,010.51	3.954E-02	Pulse	0.50	3
Al			1	94.472	ug/l	1.40	11,960.26	3.496E-02	Pulse	1.00	3
Se			1	0.304	ug/l	14.69	30.33	1.576E-03	Pulse	3.00	3
Sb			1	0.206	ug/l	4.28	1,363.39	3.170E-03	Pulse	1.00	3
Se			1	1.235	ug/l	12.83	54.89	2.852E-03	Pulse	3.00	3

ISTD Table

Tune	Element	Mass	CPS	RSD(%)	ISTD Recovery%	Det	Time(sec)	Rep
1	Bi		10,648,899.00	0.37	91.1	Analog	0.50	3
1	Sc		342,078.04	0.55	81.8	Pulse	0.30	3
1	Ge		280,243.61	0.84	80.5	Pulse	0.30	3
1	In		2,976,791.48	0.44	82.9	Pulse	0.30	3
1	Tb		14,501,186.67	0.47	93.9	Analog	0.50	3
1	Lu		8,515,090.33	0.41	94.1	Analog	0.50	3

Quantitation Report

Tune	Element	Mass	CPS	RSD(%)	ISTD Recovery%	Det	Time(sec)	Rep
1	Ge		430,203.07	0.83	80.9	Pulse	0.30	3
1	Te		19,261.49	1.71	63.3	Pulse	0.50	3
1	Li		2,767.98	2.91	81.9	Pulse	0.30	3

Quantitation Report

File Name 042SMPL.d
File Path D:\2018\05-May\x050718m1.b
Method File
Method Path
Acq Time 5/7/2018 12:37
Sample Name MP33699-SD2
Sample Type Sample
Comment
Prep Dilution 10.000
Auto Dilution N/A
Total Dilution 10.000
Operator Name admin
Acq Mode Spectrum
Cal Title
Cal Type External Calibration
Last Calib 5/7/2018 10:39
Bkg File
Bkg Mode Count Subtraction except for ISTD
Interference File
FQ Blank File
VIS Fit Point to Point

Tune Step 1 **Tune File**

FullQuant Table

Element	Mass	ISTD	Tune	Conc	Units	RSD(%)	CPS	Ratio	Det	Time(sec)	Rep
Cr			1	0.742	ug/l	3.29	2,636.86	8.467E-03	Pulse	0.50	3
As			1	0.156	ug/l	9.78	52.00	1.670E-04	Pulse	1.00	3
Mo			1	0.166	ug/l	3.19	264.67	5.534E-04	Pulse	0.50	3
Pb			1	0.340	ug/l	3.15	6,584.95	5.771E-04	Pulse	1.00	3
Be			1	0.054	ug/l	151.99	0.83	2.265E-06	Pulse	2.00	3
Ag			1	0.043	ug/l	21.82	307.33	6.432E-04	Pulse	0.50	3
Ba			1	27.003	ug/l	1.09	13,447.68	4.156E-03	Pulse	0.50	3
Tl			1	0.024	ug/l	15.46	487.34	4.272E-05	Pulse	0.50	3
Sn			1	0.573	ug/l	5.58	1,587.86	4.908E-04	Pulse	0.30	3
Sr			1	225.289	ug/l	1.76	221,167.60	6.837E-02	Pulse	0.50	3
[Pb]			1	0.322	ug/l	6.21	3,036.95	2.661E-04	Pulse	0.50	3
Ca			1	20736.701	ug/l	1.00	86,088.81	2.333E-01	Pulse	0.50	3
Tl			1	3.171	ug/l	18.76	109.33	2.967E-04	Pulse	0.50	3
Na			1	10256.815	ug/l	0.60	2,320,328.42	6.289E+00	Pulse	1.00	3
Mg			1	3062.755	ug/l	0.43	297,933.53	8.075E-01	Pulse	1.00	3
K			1	1342.481	ug/l	0.48	108,645.96	2.945E-01	Pulse	1.00	3
V			1	0.164	ug/l	31.35	846.02	2.294E-03	Pulse	0.50	3
Mn			1	8.357	ug/l	3.18	8,695.31	2.793E-02	Pulse	0.50	3
Fe			1	74.468	ug/l	3.35	158,122.65	5.079E-01	Pulse	0.50	3
Co			1	0.190	ug/l	7.91	793.35	2.548E-03	Pulse	0.50	3
Ni			1	20.616	ug/l	1.77	22,956.95	7.374E-02	Pulse	0.50	3
Cu			1	19.961	ug/l	3.21	74,374.39	2.389E-01	Pulse	0.50	3
Zn			1	722.747	ug/l	1.32	255,334.46	5.341E-01	Pulse	1.00	3
Cd			1	5.845	ug/l	2.86	3,932.43	8.226E-03	Pulse	0.50	3
Al			1	87.025	ug/l	1.13	2,677.85	7.258E-03	Pulse	1.00	3
Se			1	0.308	ug/l	70.99	23.11	9.140E-04	Pulse	3.00	3
Sb			1	0.317	ug/l	10.44	583.01	1.220E-03	Pulse	1.00	3
Se			1	0.791	ug/l	79.64	34.44	1.364E-03	Pulse	3.00	3

ISTD Table

Tune	Element	Mass	CPS	RSD(%)	ISTD Recovery%	Det	Time(sec)	Rep
1	Bi		11,410,676.00	0.33	97.6	Analog	0.50	3
1	Sc		368,949.17	0.91	88.2	Pulse	0.30	3
1	Ge		311,393.68	1.77	89.4	Pulse	0.30	3

Quantitation Report

Tune	Element	Mass	CPS	RSD(%)	ISTD Recovery%	Det	Time(sec)	Rep
1	In		3,235,217.44	0.69	90.1	Pulse	0.30	3
1	Tb		15,017,782.33	0.78	97.2	Analog	0.50	3
1	Lu		8,823,432.67	0.36	97.5	Analog	0.50	3
1	Ge		478,118.90	1.26	89.9	Pulse	0.30	3
1	Te		25,266.79	0.97	83.1	Pulse	0.50	3
1	Li		3,090.25	2.65	91.4	Pulse	0.30	3

Quantitation Report

File Name 043CCVA.d
File Path D:\2018\05-May\x050718m1.b
Method File
Method Path
Acq Time 5/7/2018 12:40
Sample Name CCV (Ag)
Sample Type CCV_Ag
Comment =std 4
Prep Dilution 1.000
Auto Dilution N/A
Total Dilution 1.000
Operator Name admin
Acq Mode Spectrum
Cal Title
Cal Type External Calibration
Last Calib 5/7/2018 10:39
Bkg File
Bkg Mode Count Subtraction except for ISTD
Interference File
FQ Blank File
VIS Fit Point to Point

Tune Step 1 **Tune File**

FullQuant Table

Element	Mass	ISTD	Tune	Conc	Units	RSD(%)	CPS	Ratio	Det	Time(sec)	Rep
Cr			1	49.981	ug/l	1.41	1,005,053.10	3.268E+00	Pulse	0.50	3
As			1	50.138	ug/l	1.57	101,654.79	3.305E-01	Pulse	1.00	3
Mo			1	50.174	ug/l	0.42	727,245.83	1.542E+00	Pulse	0.50	3
Pb			1	46.941	ug/l	0.11	4,371,657.67	3.970E-01	Pulse	1.00	3
Be			1	52.582	ug/l	1.39	6,750.62	1.826E-02	Pulse	2.00	3
Ag			1	50.553	ug/l	0.83	2,859,351.92	6.061E+00	Pulse	0.50	3
Ba			1	49.340	ug/l	1.48	240,449.17	7.583E-02	Pulse	0.50	3
Tl			1	49.169	ug/l	0.56	6,843,153.33	6.215E-01	Analog	0.50	3
Sn			1	50.091	ug/l	1.53	593,419.20	1.872E-01	Pulse	0.30	3
Sr			1	48.702	ug/l	1.32	467,263.78	1.474E-01	Pulse	0.50	3
[Pb]			1	47.063	ug/l	0.51	2,044,511.50	1.857E-01	Pulse	0.50	3
Ca			1	4895.656	ug/l	0.23	203,444.65	5.503E-01	Pulse	0.50	3
Tl			1	48.869	ug/l	1.03	16,721.15	4.523E-02	Pulse	0.50	3
Na			1	5086.613	ug/l	0.53	11,494,141.33	3.109E+01	Analog	1.00	3
Mg			1	5092.054	ug/l	0.21	4,958,674.17	1.341E+01	Analog	1.00	3
K			1	4953.815	ug/l	0.52	3,606,494.75	9.755E+00	Pulse	1.00	3
V			1	49.748	ug/l	0.33	720,067.67	1.948E+00	Pulse	0.50	3
Mn			1	49.268	ug/l	0.61	428,832.43	1.394E+00	Pulse	0.50	3
Fe			1	5084.322	ug/l	1.24	80,653,600.00	2.622E+02	Analog	0.50	3
Co			1	49.843	ug/l	1.46	1,899,500.92	6.176E+00	Pulse	0.50	3
Ni			1	51.376	ug/l	1.42	537,069.96	1.746E+00	Pulse	0.50	3
Cu			1	51.295	ug/l	1.82	1,507,937.54	4.903E+00	Pulse	0.50	3
Zn			1	51.594	ug/l	0.41	180,442.42	3.825E-01	Pulse	1.00	3
Cd			1	50.841	ug/l	0.54	337,241.76	7.149E-01	Pulse	0.50	3
Al			1	4849.208	ug/l	0.48	1,289,399.96	3.488E+00	Pulse	1.00	3
Se			1	47.393	ug/l	0.54	6,742.41	2.597E-01	Pulse	3.00	3
Sb			1	49.444	ug/l	0.56	638,935.02	1.354E+00	Pulse	1.00	3
Se			1	47.736	ug/l	1.58	3,454.31	1.331E-01	Pulse	3.00	3

ISTD Table

Tune	Element	Mass	CPS	RSD(%)	ISTD Recovery%	Det	Time(sec)	Rep
1	Bi		11,011,485.67	0.35	94.2	Analog	0.50	3
1	Sc		369,717.69	0.22	88.4	Pulse	0.30	3
1	Ge		307,584.80	1.21	88.3	Pulse	0.30	3

Quantitation Report

Tune	Element	Mass	CPS	RSD(%)	ISTD Recovery%	Det	Time(sec)	Rep
1	In		3,171,313.97	1.84	88.3	Pulse	0.30	3
1	Tb		14,899,737.33	0.17	96.5	Analog	0.50	3
1	Lu		8,685,258.33	0.68	96.0	Analog	0.50	3
1	Ge		471,757.54	0.28	88.7	Pulse	0.30	3
1	Te		25,965.07	1.14	85.4	Pulse	0.50	3
1	Li		2,922.45	2.39	86.5	Pulse	0.30	3

Quantitation Report

File Name 044_CCV.d
File Path D:\2018\05-May\x\050718m1.b
Method File
Method Path
Acq Time 5/7/2018 12:44
Sample Name CCV
Sample Type CCV
Comment =std 5
Prep Dilution 1.000
Auto Dilution N/A
Total Dilution 1.000
Operator Name admin
Acq Mode Spectrum
Cal Title
Cal Type External Calibration
Last Calib 5/7/2018 10:39
Bkg File
Bkg Mode Count Subtraction except for ISTD
Interference File
FQ Blank File
VIS Fit Point to Point

Tune Step **Tune File**
 1

FullQuant Table

Element	Mass	ISTD	Tune	Conc	Units	RSD(%)	CPS	Ratio	Det	Time(sec)	Rep
Cr			1	99.520	ug/l	1.38	2,006,303.58	6.503E+00	Pulse	0.50	3
As			1	100.010	ug/l	0.42	203,389.75	6.593E-01	Pulse	1.00	3
Mo			1	99.152	ug/l	0.51	1,455,572.04	3.073E+00	Pulse	0.50	3
Pb			1	98.545	ug/l	0.70	8,984,956.67	8.331E-01	Analog	1.00	3
Be			1	102.179	ug/l	0.86	13,462.95	3.548E-02	Pulse	2.00	3
Ag			1	97.681	ug/l	0.21	5,548,003.67	1.171E+01	Pulse	0.50	3
Ba			1	99.547	ug/l	0.43	483,358.09	1.530E-01	Pulse	0.50	3
Tl			1	98.297	ug/l	0.69	13,399,171.00	1.242E+00	Analog	0.50	3
Sn			1	100.347	ug/l	0.97	1,183,655.72	3.746E-01	Pulse	0.30	3
Sr			1	99.622	ug/l	0.35	951,126.35	3.011E-01	Pulse	0.50	3
[Pb]			1	93.639	ug/l	0.50	3,982,565.50	3.693E-01	Pulse	0.50	3
Ca			1	9763.930	ug/l	0.48	416,212.06	1.097E+00	Pulse	0.50	3
Ti			1	98.679	ug/l	2.04	34,643.92	9.132E-02	Pulse	0.50	3
Na			1	9974.103	ug/l	0.94	23,119,104.67	6.094E+01	Analog	1.00	3
Mg			1	9936.722	ug/l	1.20	9,929,296.33	2.617E+01	Analog	1.00	3
K			1	9969.366	ug/l	0.92	7,436,045.33	1.960E+01	Analog	1.00	3
V			1	98.507	ug/l	0.44	1,462,569.00	3.855E+00	Pulse	0.50	3
Mn			1	98.955	ug/l	0.41	862,605.50	2.796E+00	Pulse	0.50	3
Fe			1	10262.342	ug/l	0.85	163,259,210.67	5.292E+02	Analog	0.50	3
Co			1	99.134	ug/l	0.66	3,789,697.25	1.228E+01	Pulse	0.50	3
Ni			1	101.387	ug/l	0.20	1,062,046.17	3.442E+00	Pulse	0.50	3
Cu			1	100.817	ug/l	0.50	2,958,235.58	9.589E+00	Pulse	0.50	3
Zn			1	101.116	ug/l	0.36	353,161.17	7.455E-01	Pulse	1.00	3
Cd			1	100.033	ug/l	0.65	666,303.29	1.407E+00	Pulse	0.50	3
Al			1	9646.287	ug/l	1.06	2,631,693.58	6.937E+00	Pulse	1.00	3
Se			1	96.882	ug/l	0.99	13,371.78	5.301E-01	Pulse	3.00	3
Sb			1	98.311	ug/l	0.48	1,275,517.58	2.693E+00	Pulse	1.00	3
Se			1	96.798	ug/l	1.10	6,776.54	2.686E-01	Pulse	3.00	3

ISTD Table

Tune	Element	Mass	CPS	RSD(%)	ISTD Recovery%	Det	Time(sec)	Rep
1	Bi		10,784,576.00	0.59	92.2	Analog	0.50	3
1	Sc		379,418.94	1.04	90.7	Pulse	0.30	3
1	Ge		308,518.38	0.55	88.6	Pulse	0.30	3
1	In		3,159,358.48	0.19	88.0	Pulse	0.30	3
1	Tb		14,911,698.33	0.76	96.5	Analog	0.50	3
1	Lu		8,733,712.00	0.43	96.5	Analog	0.50	3

Quantitation Report

Tune	Element	Mass	CPS	RSD(%)	ISTD Recovery%	Det	Time(sec)	Rep
1	Ge		473,720.97	0.22	89.1	Pulse	0.30	3
1	Te		25,226.75	0.37	83.0	Pulse	0.50	3
1	Li		2,829.10	4.63	83.7	Pulse	0.30	3

Quantitation Report

File Name 045_CCB.d
File Path D:\2018\05-May\x050718m1.b
Method File
Method Path
Acq Time 5/7/2018 12:48
Sample Name CCB
Sample Type CCB
Comment
Prep Dilution 1.000
Auto Dilution N/A
Total Dilution 1.000
Operator Name admin
Acq Mode Spectrum
Cal Title
Cal Type External Calibration
Last Calib 5/7/2018 10:39
Bkg File
Bkg Mode Count Subtraction except for ISTD
Interference File
FQ Blank File
VIS Fit Point to Point

Tune Step **Tune File**
 1

FullQuant Table

Element	Mass	ISTD	Tune	Conc	Units	RSD(%)	CPS	Ratio	Det	Time(sec)	Rep
Cr			1	0.705	ug/l	3.82	15,574.92	4.964E-02	Pulse	0.50	3
As			1	0.014	ug/l	44.59	48.67	1.552E-04	Pulse	1.00	3
Mo			1	0.035	ug/l	10.49	542.01	1.128E-03	Pulse	0.50	3
Pb			1	0.013	ug/l	11.16	4,599.62	4.010E-04	Pulse	1.00	3
Be			1	0.022	ug/l	18.02	3.00	8.017E-06	Pulse	2.00	3
Ag			1	0.012	ug/l	10.30	754.02	1.570E-03	Pulse	0.50	3
Ba			1	0.021	ug/l	19.57	128.67	3.945E-05	Pulse	0.50	3
Tl			1	0.033	ug/l	7.01	4,986.75	4.348E-04	Pulse	0.50	3
Sn			1	0.042	ug/l	9.98	1,415.62	4.338E-04	Pulse	0.30	3
Sr			1	0.043	ug/l	9.35	1,631.41	5.000E-04	Pulse	0.50	3
[Pb]			1	0.011	ug/l	25.12	2,092.14	1.824E-04	Pulse	0.50	3
Ca			1	4.998	ug/l	32.74	384.67	1.028E-03	Pulse	0.50	3
Tl			1	0.041	ug/l	56.99	15.33	4.089E-05	Pulse	0.50	3
Na			1	3.624	ug/l	1.21	17,796.89	4.754E-02	Pulse	1.00	3
Mg			1	2.746	ug/l	1.91	3,033.90	8.103E-03	Pulse	1.00	3
K			1	1.701	ug/l	2.02	12,839.50	3.429E-02	Pulse	1.00	3
V			1	0.000	ug/l	-152.01	614.01	1.640E-03	Pulse	0.50	3
Mn			1	1.072	ug/l	1.93	10,855.05	3.460E-02	Pulse	0.50	3
Fe			1	3.070	ug/l	3.49	88,570.52	2.823E-01	Pulse	0.50	3
Co			1	0.017	ug/l	1.08	712.02	2.269E-03	Pulse	0.50	3
Ni			1	0.199	ug/l	4.59	3,314.96	1.057E-02	Pulse	0.50	3
Cu			1	-0.022	ug/l	-3.97	15,050.55	4.797E-02	Pulse	0.50	3
Zn			1	0.197	ug/l	9.48	2,751.20	5.728E-03	Pulse	1.00	3
Cd			1	0.012	ug/l	18.28	81.33	1.694E-04	Pulse	0.50	3
Al			1	33.841	ug/l	1.67	9,484.26	2.533E-02	Pulse	1.00	3
Se			1	0.018	ug/l	134.02	23.34	8.449E-04	Pulse	3.00	3
Sb			1	0.023	ug/l	8.66	478.34	9.959E-04	Pulse	1.00	3
Se			1	-0.017	ug/l	-481.82	30.22	1.099E-03	Pulse	3.00	3

Quantitation Report

ISTD Table

Tune	Element	Mass	CPS	RSD(%)	ISTD Recovery%	Det	Time(sec)	Rep
1	Bi		11,470,518.33	0.48	98.1	Analog	0.50	3
1	Sc		374,391.81	0.47	89.5	Pulse	0.30	3
1	Ge		313,773.03	0.51	90.1	Pulse	0.30	3
1	In		3,262,772.23	0.65	90.9	Pulse	0.30	3
1	Tb		15,051,465.67	0.92	97.5	Analog	0.50	3
1	Lu		8,716,314.00	0.46	96.3	Analog	0.50	3
1	Ge		480,269.31	0.21	90.3	Pulse	0.30	3
1	Te		27,571.42	2.04	90.7	Pulse	0.50	3
1	Li		2,955.79	4.24	87.5	Pulse	0.30	3

Quantitation Report

File Name 046SMPL.d
File Path D:\2018\05-May\x\050718m1.b
Method File
Method Path
Acq Time 5/7/2018 12:51
Sample Name MP33699-S3
Sample Type Sample
Comment
Prep Dilution 2.000
Auto Dilution N/A
Total Dilution 2.000
Operator Name admin
Acq Mode Spectrum
Cal Title
Cal Type External Calibration
Last Calib 5/7/2018 10:39
Bkg File
Bkg Mode Count Subtraction except for ISTD
Interference File
FQ Blank File
VIS Fit Point to Point

Tune Step **Tune File**
 1

FullQuant Table

Element	Mass	ISTD	Tune	Conc	Units	RSD(%)	CPS	Ratio	Det	Time(sec)	Rep
Cr			1	217.804	ug/l	1.24	1,922,507.75	7.116E+00	Pulse	0.50	3
As			1	198.882	ug/l	0.98	177,097.98	6.555E-01	Pulse	1.00	3
Mo			1	220.265	ug/l	1.21	1,414,000.71	3.413E+00	Pulse	0.50	3
Pb			1	217.449	ug/l	1.44	9,116,492.67	9.192E-01	Analog	1.00	3
Be			1	213.539	ug/l	1.97	12,299.38	3.708E-02	Pulse	2.00	3
Ag			1	109.546	ug/l	0.68	2,720,844.25	6.567E+00	Pulse	0.50	3
Ba			1	239.602	ug/l	0.90	524,208.93	1.841E-01	Pulse	0.50	3
Tl			1	208.180	ug/l	0.77	13,048,924.00	1.316E+00	Analog	0.50	3
Sn			1	216.023	ug/l	0.12	1,148,081.93	4.032E-01	Pulse	0.30	3
Sr			1	435.025	ug/l	0.95	1,870,145.75	6.569E-01	Pulse	0.50	3
[Pb]			1	199.401	ug/l	0.49	3,899,772.58	3.932E-01	Pulse	0.50	3
Ca			1	39963.947	ug/l	1.60	744,615.50	2.245E+00	Pulse	0.50	3
Ti			1	213.528	ug/l	1.41	32,778.01	9.880E-02	Pulse	0.50	3
Na			1	30725.727	ug/l	1.19	31,133,514.00	9.385E+01	Analog	1.00	3
Mg			1	23281.705	ug/l	1.61	10,171,293.33	3.066E+01	Analog	1.00	3
K			1	21236.159	ug/l	1.40	6,924,633.50	2.087E+01	Analog	1.00	3
V			1	213.694	ug/l	1.61	1,387,066.87	4.181E+00	Pulse	0.50	3
Mn			1	219.949	ug/l	0.91	839,362.88	3.107E+00	Pulse	0.50	3
Fe			1	21140.055	ug/l	1.14	147,254,565.33	5.451E+02	Analog	0.50	3
Co			1	216.292	ug/l	0.58	3,620,395.50	1.340E+01	Pulse	0.50	3
Ni			1	238.917	ug/l	0.89	1,095,620.46	4.055E+00	Pulse	0.50	3
Cu			1	228.462	ug/l	0.72	2,933,471.17	1.086E+01	Pulse	0.50	3
Zn			1	814.816	ug/l	1.36	1,239,084.79	2.991E+00	Pulse	1.00	3
Cd			1	212.639	ug/l	1.18	619,361.67	1.495E+00	Pulse	0.50	3
Al			1	18474.173	ug/l	1.57	2,203,574.50	6.642E+00	Pulse	1.00	3
Se			1	203.608	ug/l	1.22	10,306.44	5.570E-01	Pulse	3.00	3
Sb			1	204.541	ug/l	0.84	1,160,483.75	2.801E+00	Pulse	1.00	3
Se			1	204.702	ug/l	2.08	5,254.17	2.840E-01	Pulse	3.00	3

ISTD Table

Tune	Element	Mass	CPS	RSD(%)	ISTD Recovery%	Det	Time(sec)	Rep
1	Bi		9,918,493.67	0.30	84.8	Analog	0.50	3
1	Sc		331,771.30	0.73	79.3	Pulse	0.30	3
1	Ge		270,170.39	0.35	77.6	Pulse	0.30	3
1	In		2,847,125.58	0.50	79.3	Pulse	0.30	3
1	Tb		14,108,046.00	0.19	91.3	Analog	0.50	3
1	Lu		8,363,165.33	0.58	92.4	Analog	0.50	3

Quantitation Report

Tune	Element	Mass	CPS	RSD(%)	ISTD Recovery%	Det	Time(sec)	Rep
1	Ge		414,322.08	0.56	77.9	Pulse	0.30	3
1	Te		18,507.39	1.90	60.9	Pulse	0.50	3
1	Li		2,609.07	1.09	77.2	Pulse	0.30	3

Quantitation Report

File Name 047SMPL.d
File Path D:\2018\05-May\x\050718m1.b
Method File
Method Path
Acq Time 5/7/2018 12:55
Sample Name MP33699-S4
Sample Type Sample
Comment
Prep Dilution 2.000
Auto Dilution N/A
Total Dilution 2.000
Operator Name admin
Acq Mode Spectrum
Cal Title
Cal Type External Calibration
Last Calib 5/7/2018 10:39
Bkg File
Bkg Mode Count Subtraction except for ISTD
Interference File
FQ Blank File
VIS Fit Point to Point

Tune Step **Tune File**
1

FullQuant Table

Element	Mass	ISTD	Tune	Conc	Units	RSD(%)	CPS	Ratio	Det	Time(sec)	Rep
Cr			1	210.741	ug/l	0.79	1,891,418.71	6.885E+00	Pulse	0.50	3
As			1	191.340	ug/l	1.06	173,230.39	6.306E-01	Pulse	1.00	3
Mo			1	212.239	ug/l	0.64	1,380,029.25	3.289E+00	Pulse	0.50	3
Pb			1	208.011	ug/l	0.02	8,884,055.67	8.793E-01	Analog	1.00	3
Be			1	202.019	ug/l	0.60	11,920.16	3.507E-02	Pulse	2.00	3
Ag			1	105.528	ug/l	1.10	2,654,760.17	6.326E+00	Pulse	0.50	3
Ba			1	231.181	ug/l	0.83	513,624.47	1.777E-01	Pulse	0.50	3
Tl			1	200.087	ug/l	0.87	12,775,877.33	1.264E+00	Analog	0.50	3
Sn			1	207.498	ug/l	0.61	1,119,854.22	3.873E-01	Pulse	0.30	3
Sr			1	415.213	ug/l	0.64	1,812,700.08	6.270E-01	Pulse	0.50	3
[Pb]			1	190.356	ug/l	0.39	3,792,564.58	3.754E-01	Pulse	0.50	3
Ca			1	37866.652	ug/l	0.76	722,767.58	2.127E+00	Pulse	0.50	3
Ti			1	204.118	ug/l	1.72	32,098.90	9.445E-02	Pulse	0.50	3
Na			1	29038.217	ug/l	0.94	30,141,390.67	8.869E+01	Analog	1.00	3
Mg			1	22247.076	ug/l	1.24	9,956,181.33	2.930E+01	Analog	1.00	3
K			1	20261.502	ug/l	0.89	6,768,491.83	1.992E+01	Analog	1.00	3
V			1	204.717	ug/l	0.86	1,361,269.29	4.006E+00	Pulse	0.50	3
Mn			1	210.673	ug/l	0.69	817,502.06	2.976E+00	Pulse	0.50	3
Fe			1	20283.569	ug/l	0.91	143,656,053.33	5.230E+02	Analog	0.50	3
Co			1	207.320	ug/l	1.57	3,528,126.75	1.284E+01	Pulse	0.50	3
Ni			1	230.389	ug/l	1.47	1,074,193.13	3.911E+00	Pulse	0.50	3
Cu			1	220.336	ug/l	1.44	2,876,840.17	1.047E+01	Pulse	0.50	3
Zn			1	781.530	ug/l	0.44	1,203,866.79	2.869E+00	Pulse	1.00	3
Cd			1	206.914	ug/l	0.66	610,452.92	1.455E+00	Pulse	0.50	3
Al			1	17534.684	ug/l	0.97	2,142,567.50	6.305E+00	Pulse	1.00	3
Se			1	194.183	ug/l	1.38	10,067.87	5.312E-01	Pulse	3.00	3
Sb			1	197.587	ug/l	0.37	1,135,478.04	2.706E+00	Pulse	1.00	3
Se			1	197.428	ug/l	1.66	5,191.60	2.739E-01	Pulse	3.00	3

ISTD Table

Tune	Element	Mass	CPS	RSD(%)	ISTD Recovery%	Det	Time(sec)	Rep
1	Bi		10,103,845.67	0.40	86.4	Analog	0.50	3
1	Sc		339,863.77	1.14	81.3	Pulse	0.30	3
1	Ge		274,711.06	1.19	78.9	Pulse	0.30	3
1	In		2,891,214.82	0.55	80.5	Pulse	0.30	3
1	Tb		14,306,314.67	0.41	92.6	Analog	0.50	3
1	Lu		8,426,806.50	0.58	93.1	Analog	0.50	3

Quantitation Report

Tune	Element	Mass	CPS	RSD(%)	ISTD Recovery%	Det	Time(sec)	Rep
1	Ge		419,650.88	0.41	78.9	Pulse	0.30	3
1	Te		18,953.17	1.10	62.3	Pulse	0.50	3
1	Li		2,583.51	3.77	76.5	Pulse	0.30	3

Quantitation Report

File Name 048SMPL.d
File Path D:\2018\05-May\x\050718m1.b
Method File
Method Path
Acq Time 5/7/2018 12:59
Sample Name MP33699-PS2
Sample Type Sample
Comment
Prep Dilution 2.000
Auto Dilution N/A
Total Dilution 2.000
Operator Name admin
Acq Mode Spectrum
Cal Title
Cal Type External Calibration
Last Calib 5/7/2018 10:39
Bkg File
Bkg Mode Count Subtraction except for ISTD
Interference File
FQ Blank File
VIS Fit Point to Point

Tune Step **Tune File**
1

FullQuant Table

Element	Mass	ISTD	Tune	Conc	Units	RSD(%)	CPS	Ratio	Det	Time(sec)	Rep
Cr			1	20.942	ug/l	0.76	195,874.63	6.875E-01	Pulse	0.50	3
As			1	18.930	ug/l	1.18	17,792.27	6.245E-02	Pulse	1.00	3
Mo			1	20.629	ug/l	0.21	139,774.16	3.197E-01	Pulse	0.50	3
Pb			1	19.124	ug/l	0.29	862,803.98	8.110E-02	Pulse	1.00	3
Be			1	19.897	ug/l	2.27	1,207.04	3.455E-03	Pulse	2.00	3
Ag			1	4.248	ug/l	0.74	111,394.04	2.549E-01	Pulse	0.50	3
Ba			1	45.639	ug/l	0.67	105,607.53	3.508E-02	Pulse	0.50	3
Tl			1	18.173	ug/l	1.00	1,221,939.13	1.149E-01	Pulse	0.50	3
Sn			1	22.577	ug/l	1.74	127,622.68	4.239E-02	Pulse	0.30	3
Sr			1	231.174	ug/l	0.74	1,051,465.71	3.492E-01	Pulse	0.50	3
[Pb]			1	18.334	ug/l	0.98	385,956.45	3.628E-02	Pulse	0.50	3
Ca			1	21023.544	ug/l	0.67	412,615.65	1.181E+00	Pulse	0.50	3
Ti			1	22.077	ug/l	4.71	3,569.67	1.022E-02	Pulse	0.50	3
Na			1	11524.786	ug/l	0.54	12,303,639.33	3.522E+01	Analog	1.00	3
Mg			1	4717.405	ug/l	0.91	2,170,668.58	6.213E+00	Pulse	1.00	3
K			1	3099.406	ug/l	0.93	1,073,564.92	3.073E+00	Pulse	1.00	3
V			1	20.202	ug/l	1.12	138,615.15	3.968E-01	Pulse	0.50	3
Mn			1	30.829	ug/l	0.52	125,135.70	4.392E-01	Pulse	0.50	3
Fe			1	2126.452	ug/l	0.99	15,652,038.67	5.494E+01	Analog	0.50	3
Co			1	20.707	ug/l	0.22	365,561.24	1.283E+00	Pulse	0.50	3
Ni			1	40.615	ug/l	0.89	197,313.68	6.926E-01	Pulse	0.50	3
Cu			1	37.300	ug/l	0.35	516,988.95	1.815E+00	Pulse	0.50	3
Zn			1	610.346	ug/l	0.49	979,956.92	2.241E+00	Pulse	1.00	3
Cd			1	24.250	ug/l	0.97	74,543.05	1.705E-01	Pulse	0.50	3
Al			1	1868.754	ug/l	0.76	235,060.16	6.728E-01	Pulse	1.00	3
Se			1	19.103	ug/l	4.02	1,013.69	5.293E-02	Pulse	3.00	3
Sb			1	18.417	ug/l	0.93	110,407.01	2.525E-01	Pulse	1.00	3
Se			1	20.341	ug/l	2.22	560.23	2.925E-02	Pulse	3.00	3

ISTD Table

Tune	Element	Mass	CPS	RSD(%)	ISTD Recovery%	Det	Time(sec)	Rep
1	Bi		10,638,729.33	0.03	91.0	Analog	0.50	3
1	Sc		349,381.82	0.53	83.5	Pulse	0.30	3
1	Ge		284,907.38	0.17	81.8	Pulse	0.30	3
1	In		3,010,697.17	0.49	83.9	Pulse	0.30	3
1	Tb		14,742,867.33	1.14	95.5	Analog	0.50	3
1	Lu		8,642,763.67	0.23	95.5	Analog	0.50	3

Quantitation Report

Tune	Element	Mass	CPS	RSD(%)	ISTD Recovery%	Det	Time(sec)	Rep
1	Ge		437,229.79	0.74	82.2	Pulse	0.30	3
1	Te		19,154.72	0.84	63.0	Pulse	0.50	3
1	Li		2,879.11	1.80	85.2	Pulse	0.30	3

Quantitation Report

File Name 049SMPL.d
File Path D:\2018\05-May\x\050718m1.b
Method File
Method Path
Acq Time 5/7/2018 13:02
Sample Name FA53627-2
Sample Type Sample
Comment
Prep Dilution 2.000
Auto Dilution N/A
Total Dilution 2.000
Operator Name admin
Acq Mode Spectrum
Cal Title
Cal Type External Calibration
Last Calib 5/7/2018 10:39
Bkg File
Bkg Mode Count Subtraction except for ISTD
Interference File
FQ Blank File
VIS Fit Point to Point

Tune Step 1
Tune File

FullQuant Table

Element	Mass	ISTD	Tune	Conc	Units	RSD(%)	CPS	Ratio	Det	Time(sec)	Rep
Cr			1	0.761	ug/l	2.72	8,237.12	2.84E-02	Pulse	0.50	3
As			1	0.144	ug/l	4.71	156.33	5.402E-04	Pulse	1.00	3
Mo			1	0.151	ug/l	1.12	1,056.03	2.382E-03	Pulse	0.50	3
Pb			1	0.114	ug/l	2.17	8,336.04	7.730E-04	Pulse	1.00	3
Be			1	0.088	ug/l	24.12	5.50	1.564E-05	Pulse	2.00	3
Ag			1	0.051	ug/l	2.16	1,408.73	3.178E-03	Pulse	0.50	3
Ba			1	25.123	ug/l	0.68	58,910.07	1.931E-02	Pulse	0.50	3
Tl			1	0.034	ug/l	6.44	2,426.85	2.250E-04	Pulse	0.50	3
Sn			1	0.656	ug/l	10.74	4,579.49	1.501E-03	Pulse	0.30	3
Sr			1	212.586	ug/l	0.19	979,779.02	3.212E-01	Pulse	0.50	3
[Pb]			1	0.103	ug/l	1.47	3,692.42	3.424E-04	Pulse	0.50	3
Ca			1	19436.967	ug/l	0.58	383,654.99	1.092E+00	Pulse	0.50	3
Ti			1	2.178	ug/l	7.18	355.34	1.011E-03	Pulse	0.50	3
Na			1	9675.966	ug/l	0.81	10,389,928.67	2.957E+01	Analog	1.00	3
Mg			1	2803.449	ug/l	1.15	1,297,444.29	3.693E+00	Pulse	1.00	3
K			1	1234.560	ug/l	0.59	436,605.09	1.243E+00	Pulse	1.00	3
V			1	0.210	ug/l	5.61	2,024.78	5.762E-03	Pulse	0.50	3
Mn			1	8.689	ug/l	0.94	36,728.58	1.269E-01	Pulse	0.50	3
Fe			1	55.187	ug/l	1.39	447,533.93	1.547E+00	Pulse	0.50	3
Co			1	0.179	ug/l	3.48	3,259.62	1.126E-02	Pulse	0.50	3
Ni			1	19.801	ug/l	1.62	98,268.74	3.396E-01	Pulse	0.50	3
Cu			1	13.200	ug/l	0.83	195,197.35	6.745E-01	Pulse	0.50	3
Zn			1	606.761	ug/l	0.55	987,733.38	2.228E+00	Pulse	1.00	3
Cd			1	5.311	ug/l	2.23	16,554.08	3.735E-02	Pulse	0.50	3
Al			1	80.515	ug/l	7.90	10,521.45	2.995E-02	Pulse	1.00	3
Se			1	0.347	ug/l	25.98	33.44	1.694E-03	Pulse	3.00	3
Sb			1	0.212	ug/l	3.75	1,442.72	3.254E-03	Pulse	1.00	3
Se			1	0.930	ug/l	16.61	48.00	2.431E-03	Pulse	3.00	3

ISTD Table

Tune	Element	Mass	CPS	RSD(%)	ISTD Recovery%	Det	Time(sec)	Rep
1	Bi		10,784,506.33	0.31	92.2	Analog	0.50	3
1	Sc		351,369.90	0.64	84.0	Pulse	0.30	3
1	Ge		289,394.29	1.00	83.1	Pulse	0.30	3
1	In		3,050,517.38	0.49	85.0	Pulse	0.30	3
1	Tb		14,807,215.00	0.28	95.9	Analog	0.50	3
1	Lu		8,709,227.33	0.65	96.2	Analog	0.50	3

Quantitation Report

Tune	Element	Mass	CPS	RSD(%)	ISTD Recovery%	Det	Time(sec)	Rep
1	Ge		443,297.24	0.62	83.3	Pulse	0.30	3
1	Te		19,747.33	0.08	64.9	Pulse	0.50	3
1	Li		2,920.23	2.78	86.4	Pulse	0.30	3

Quantitation Report

File Name 050SMPL.d
File Path D:\2018\05-May\x\050718m1.b
Method File
Method Path
Acq Time 5/7/2018 13:06
Sample Name FA53627-3
Sample Type Sample
Comment
Prep Dilution 2.000
Auto Dilution N/A
Total Dilution 2.000
Operator Name admin
Acq Mode Spectrum
Cal Title
Cal Type External Calibration
Last Calib 5/7/2018 10:39
Bkg File
Bkg Mode Count Subtraction except for ISTD
Interference File
FQ Blank File
VIS Fit Point to Point

Tune Step **Tune File**
 1

FullQuant Table

Element	Mass	ISTD	Tune	Conc	Units	RSD(%)	CPS	Ratio	Det	Time(sec)	Rep
Cr			1	0.248	ug/l	4.25	3,457.66	1.171E-02	Pulse	0.50	3
As			1	0.066	ug/l	2.25	83.00	2.811E-04	Pulse	1.00	3
Mo			1	0.023	ug/l	23.28	176.67	3.894E-04	Pulse	0.50	3
Pb			1	0.014	ug/l	27.99	3,902.12	3.488E-04	Pulse	1.00	3
Be			1	0.059	ug/l	34.25	3.83	1.066E-05	Pulse	2.00	3
Ag			1	0.011	ug/l	2.96	349.34	7.695E-04	Pulse	0.50	3
Ba			1	3.573	ug/l	3.47	8,636.75	2.752E-03	Pulse	0.50	3
Tl			1	0.019	ug/l	13.01	1,470.74	1.315E-04	Pulse	0.50	3
Sn			1	0.642	ug/l	3.88	4,628.39	1.475E-03	Pulse	0.30	3
Sr			1	2.786	ug/l	0.91	14,358.81	4.574E-03	Pulse	0.50	3
[Pb]			1	0.010	ug/l	18.38	1,781.44	1.592E-04	Pulse	0.50	3
Ca			1	175.030	ug/l	2.52	3,702.36	1.030E-02	Pulse	0.50	3
Ti			1	0.125	ug/l	41.66	22.00	6.113E-05	Pulse	0.50	3
Na			1	565.313	ug/l	0.37	629,920.56	1.752E+00	Pulse	1.00	3
Mg			1	17.431	ug/l	0.31	8,568.50	2.383E-02	Pulse	1.00	3
K			1	13.513	ug/l	2.13	15,902.39	4.422E-02	Pulse	1.00	3
V			1	0.158	ug/l	7.96	1,702.75	4.735E-03	Pulse	0.50	3
Mn			1	0.862	ug/l	3.29	4,875.96	1.651E-02	Pulse	0.50	3
Fe			1	0.795	ug/l	18.46	42,656.65	1.445E-01	Pulse	0.50	3
Co			1	0.055	ug/l	4.82	1,058.03	3.584E-03	Pulse	0.50	3
Ni			1	1.290	ug/l	2.60	7,582.84	2.569E-02	Pulse	0.50	3
Cu			1	1.250	ug/l	3.00	32,240.19	1.092E-01	Pulse	0.50	3
Zn			1	1.750	ug/l	2.86	4,857.62	1.070E-02	Pulse	1.00	3
Cd			1	0.007	ug/l	29.12	24.67	5.436E-05	Pulse	0.50	3
Al			1	7.517	ug/l	3.84	1,332.05	3.704E-03	Pulse	1.00	3
Se			1	0.100	ug/l	73.41	20.78	1.018E-03	Pulse	3.00	3
Sb			1	0.147	ug/l	15.68	1,071.40	2.361E-03	Pulse	1.00	3
Se			1	0.501	ug/l	16.95	37.56	1.838E-03	Pulse	3.00	3

ISTD Table

Tune Element	Mass	CPS	RSD(%)	ISTD Recovery%	Det	Time(sec)	Rep
1 Bi		11,187,947.67	0.21	95.7	Analog	0.50	3

Quantitation Report

Tune	Element	Mass	CPS	RSD(%)	ISTD Recovery%	Det	Time(sec)	Rep
1	Sc		359,634.61	0.44	86.0	Pulse	0.30	3
1	Ge		295,234.57	0.89	84.8	Pulse	0.30	3
1	In		3,138,788.70	1.08	87.4	Pulse	0.30	3
1	Tb		14,886,976.67	0.73	96.4	Analog	0.50	3
1	Lu		8,739,878.67	1.38	96.6	Analog	0.50	3
1	Ge		453,981.01	0.54	85.4	Pulse	0.30	3
1	Te		20,446.78	2.26	67.2	Pulse	0.50	3
1	Li		2,879.11	4.47	85.2	Pulse	0.30	3

Quantitation Report

File Name 051SMPL.d
File Path D:\2018\05-May\x\050718m1.b
Method File
Method Path
Acq Time 5/7/2018 13:09
Sample Name FA53801-22
Sample Type Sample
Comment
Prep Dilution 2.000
Auto Dilution N/A
Total Dilution 2.000
Operator Name admin
Acq Mode Spectrum
Cal Title
Cal Type External Calibration
Last Calib 5/7/2018 10:39
Bkg File
Bkg Mode Count Subtraction except for ISTD
Interference File
FQ Blank File
VIS Fit Point to Point

Tune Step 1
Tune File

FullQuant Table

Element	Mass	ISTD	Tune	Conc	Units	RSD(%)	CPS	Ratio	Det	Time(sec)	Rep
Cr			1	0.282	ug/l	5.37	3,654.36	1.282E-02	Pulse	0.50	3
As			1	0.193	ug/l	9.12	199.67	7.007E-04	Pulse	1.00	3
Mo			1	2.023	ug/l	0.38	13,701.01	3.138E-02	Pulse	0.50	3
Pb			1	0.252	ug/l	1.07	14,249.27	1.354E-03	Pulse	1.00	3
Be			1	0.028	ug/l	17.33	1.83	5.249E-06	Pulse	2.00	3
Ag			1	0.018	ug/l	10.27	522.01	1.196E-03	Pulse	0.50	3
Ba			1	65.752	ug/l	0.45	151,325.29	5.053E-02	Pulse	0.50	3
Tl			1	0.008	ug/l	29.58	651.35	6.190E-05	Pulse	0.50	3
Sn			1	0.572	ug/l	2.02	4,027.14	1.345E-03	Pulse	0.30	3
Sr			1	637.014	ug/l	0.48	2,879,987.75	9.617E-01	Pulse	0.50	3
[Pb]			1	0.256	ug/l	2.53	6,779.37	6.442E-04	Pulse	0.50	3
Ca			1	46731.671	ug/l	0.75	916,946.54	2.625E+00	Pulse	0.50	3
Ti			1	3.078	ug/l	1.60	498.68	1.427E-03	Pulse	0.50	3
Na			1	10210.933	ug/l	0.62	10,901,825.67	3.120E+01	Analog	1.00	3
Mg			1	8292.000	ug/l	0.40	3,815,269.50	1.092E+01	Pulse	1.00	3
K			1	923.315	ug/l	0.97	327,406.20	9.371E-01	Pulse	1.00	3
V			1	4.870	ug/l	0.52	33,851.29	9.689E-02	Pulse	0.50	3
Mn			1	4.920	ug/l	1.00	21,018.70	7.375E-02	Pulse	0.50	3
Fe			1	102.844	ug/l	1.01	790,824.48	2.775E+00	Pulse	0.50	3
Co			1	0.057	ug/l	5.87	1,060.03	3.719E-03	Pulse	0.50	3
Ni			1	0.361	ug/l	12.20	2,830.22	9.932E-03	Pulse	0.50	3
Cu			1	0.552	ug/l	2.69	21,710.20	7.618E-02	Pulse	0.50	3
Zn			1	8.347	ug/l	1.08	15,226.34	3.488E-02	Pulse	1.00	3
Cd			1	0.007	ug/l	80.63	26.00	5.956E-05	Pulse	0.50	3
Al			1	203.671	ug/l	1.19	25,930.44	7.422E-02	Pulse	1.00	3
Se			1	0.178	ug/l	10.14	24.22	1.233E-03	Pulse	3.00	3
Sb			1	0.061	ug/l	11.27	519.68	1.190E-03	Pulse	1.00	3
Se			1	0.536	ug/l	23.74	37.11	1.886E-03	Pulse	3.00	3

ISTD Table

Tune	Element	Mass	CPS	RSD(%)	ISTD Recovery%	Det	Time(sec)	Rep
1	Bi		10,523,893.33	0.18	90.0	Analog	0.50	3
1	Sc		349,375.53	0.39	83.5	Pulse	0.30	3
1	Ge		284,982.78	0.24	81.9	Pulse	0.30	3
1	In		2,994,679.26	0.17	83.4	Pulse	0.30	3
1	Tb		14,525,922.67	0.79	94.0	Analog	0.50	3
1	Lu		8,486,445.00	1.13	93.8	Analog	0.50	3

Quantitation Report

Tune	Element	Mass	CPS	RSD(%)	ISTD Recovery%	Det	Time(sec)	Rep
1	Ge		436,575.82	0.15	82.1	Pulse	0.30	3
1	Te		19,656.58	1.37	64.6	Pulse	0.50	3
1	Li		2,826.88	2.55	83.7	Pulse	0.30	3

Quantitation Report

File Name 052SMPL.d
File Path D:\2018\05-May\x\050718m1.b
Method File
Method Path
Acq Time 5/7/2018 13:13
Sample Name FA53896-13
Sample Type Sample
Comment
Prep Dilution 2.000
Auto Dilution N/A
Total Dilution 2.000
Operator Name admin
Acq Mode Spectrum
Cal Title
Cal Type External Calibration
Last Calib 5/7/2018 10:39
Bkg File
Bkg Mode Count Subtraction except for ISTD
Interference File
FQ Blank File
VIS Fit Point to Point

Tune Step **Tune File**
 1

FullQuant Table

Element	Mass	ISTD	Tune	Conc	Units	RSD(%)	CPS	Ratio	Det	Time(sec)	Rep
Cr			1	0.373	ug/l	10.76	4,507.88	1.581E-02	Pulse	0.50	3
As			1	0.091	ug/l	18.58	104.00	3.646E-04	Pulse	1.00	3
Mo			1	0.130	ug/l	5.12	894.02	2.054E-03	Pulse	0.50	3
Pb			1	0.283	ug/l	1.08	15,757.59	1.486E-03	Pulse	1.00	3
Be			1	0.020	ug/l	158.30	1.33	3.787E-06	Pulse	2.00	3
Ag			1	0.012	ug/l	21.12	370.67	8.522E-04	Pulse	0.50	3
Ba			1	12.943	ug/l	0.72	29,918.02	9.952E-03	Pulse	0.50	3
Tl			1	0.007	ug/l	31.11	586.02	5.522E-05	Pulse	0.50	3
Sn			1	0.525	ug/l	3.53	3,779.30	1.257E-03	Pulse	0.30	3
Sr			1	645.925	ug/l	0.55	2,931,604.83	9.751E-01	Pulse	0.50	3
[Pb]			1	0.281	ug/l	0.32	7,345.60	6.927E-04	Pulse	0.50	3
Ca			1	36072.093	ug/l	1.11	708,361.44	2.026E+00	Pulse	0.50	3
Ti			1	0.356	ug/l	18.01	58.67	1.678E-04	Pulse	0.50	3
Na			1	9498.769	ug/l	1.40	10,149,663.00	2.903E+01	Analog	1.00	3
Mg			1	8521.744	ug/l	1.38	3,923,877.50	1.122E+01	Pulse	1.00	3
K			1	911.273	ug/l	1.69	323,519.41	9.253E-01	Pulse	1.00	3
V			1	0.195	ug/l	7.76	1,913.44	5.474E-03	Pulse	0.50	3
Mn			1	4.741	ug/l	2.65	20,306.58	7.123E-02	Pulse	0.50	3
Fe			1	6.102	ug/l	3.66	80,209.98	2.813E-01	Pulse	0.50	3
Co			1	0.036	ug/l	6.26	686.01	2.406E-03	Pulse	0.50	3
Ni			1	0.365	ug/l	11.22	2,854.90	1.001E-02	Pulse	0.50	3
Cu			1	1.560	ug/l	2.09	35,312.18	1.239E-01	Pulse	0.50	3
Zn			1	6.189	ug/l	1.84	11,741.92	2.697E-02	Pulse	1.00	3
Cd			1	0.003	ug/l	31.09	12.67	2.904E-05	Pulse	0.50	3
Al			1	11.424	ug/l	5.06	1,786.42	5.108E-03	Pulse	1.00	3
Se			1	0.027	ug/l	170.30	16.11	8.198E-04	Pulse	3.00	3
Sb			1	0.049	ug/l	6.52	443.01	1.018E-03	Pulse	1.00	3
Se			1	0.592	ug/l	22.45	38.56	1.963E-03	Pulse	3.00	3

ISTD Table

Tune	Element	Mass	CPS	RSD(%)	ISTD Recovery%	Det	Time(sec)	Rep
1	Bi		10,604,498.67	0.51	90.7	Analog	0.50	3
1	Sc		349,656.69	0.79	83.6	Pulse	0.30	3
1	Ge		285,129.08	0.91	81.9	Pulse	0.30	3
1	In		3,006,310.72	0.15	83.7	Pulse	0.30	3
1	Tb		14,640,776.33	0.61	94.8	Analog	0.50	3
1	Lu		8,610,271.67	0.57	95.1	Analog	0.50	3

Quantitation Report

Tune	Element	Mass	CPS	RSD(%)	ISTD Recovery%	Det	Time(sec)	Rep
1	Ge		435,448.08	1.10	81.9	Pulse	0.30	3
1	Te		19,645.90	0.74	64.6	Pulse	0.50	3
1	Li		2,760.20	3.78	81.7	Pulse	0.30	3

Quantitation Report

File Name 053SMPL.d
File Path D:\2018\05-May\x050718m1.b
Method File
Method Path
Acq Time 5/7/2018 13:17
Sample Name FA53896-14
Sample Type Sample
Comment
Prep Dilution 2.000
Auto Dilution N/A
Total Dilution 2.000
Operator Name admin
Acq Mode Spectrum
Cal Title
Cal Type External Calibration
Last Calib 5/7/2018 10:39
Bkg File
Bkg Mode Count Subtraction except for ISTD
Interference File
FQ Blank File
VIS Fit Point to Point

Tune Step 1
Tune File

FullQuant Table

Element	Mass	ISTD	Tune	Conc	Units	RSD(%)	CPS	Ratio	Det	Time(sec)	Rep
Cr			1	1.142	ug/l	29.17	11,620.33	4.093E-02	Pulse	0.50	3
As			1	0.103	ug/l	4.35	114.67	4.039E-04	Pulse	1.00	3
Mo			1	0.105	ug/l	5.74	718.69	1.668E-03	Pulse	0.50	3
Pb			1	0.184	ug/l	2.01	11,238.36	1.066E-03	Pulse	1.00	3
Be			1	0.017	ug/l	27.94	1.17	3.390E-06	Pulse	2.00	3
Ag			1	0.012	ug/l	14.58	371.34	8.622E-04	Pulse	0.50	3
Ba			1	12.552	ug/l	1.44	28,637.95	9.652E-03	Pulse	0.50	3
Tl			1	0.004	ug/l	13.92	422.01	4.001E-05	Pulse	0.50	3
Sn			1	0.442	ug/l	1.00	3,269.20	1.102E-03	Pulse	0.30	3
Sr			1	632.483	ug/l	0.84	2,833,205.42	9.549E-01	Pulse	0.50	3
[Pb]			1	0.186	ug/l	0.78	5,324.18	5.051E-04	Pulse	0.50	3
Ca			1	35296.498	ug/l	0.62	682,198.67	1.982E+00	Pulse	0.50	3
Tl			1	0.232	ug/l	25.16	38.00	1.105E-04	Pulse	0.50	3
Na			1	9312.089	ug/l	0.60	9,793,428.33	2.846E+01	Analog	1.00	3
Mg			1	8370.586	ug/l	0.38	3,793,501.00	1.102E+01	Pulse	1.00	3
K			1	889.197	ug/l	0.72	310,961.35	9.037E-01	Pulse	1.00	3
V			1	0.196	ug/l	1.98	1,884.77	5.477E-03	Pulse	0.50	3
Mn			1	4.625	ug/l	1.51	19,757.40	6.959E-02	Pulse	0.50	3
Fe			1	44.099	ug/l	27.07	358,005.67	1.261E+00	Pulse	0.50	3
Co			1	0.050	ug/l	12.48	928.02	3.269E-03	Pulse	0.50	3
Ni			1	76.555	ug/l	25.15	369,715.35	1.302E+00	Pulse	0.50	3
Cu			1	1.339	ug/l	1.31	32,195.45	1.134E-01	Pulse	0.50	3
Zn			1	4.539	ug/l	1.39	9,016.45	2.092E-02	Pulse	1.00	3
Cd			1	0.003	ug/l	94.87	12.67	2.932E-05	Pulse	0.50	3
Al			1	25.219	ug/l	20.82	3,464.98	1.007E-02	Pulse	1.00	3
Se			1	0.021	ug/l	65.69	15.78	8.022E-04	Pulse	3.00	3
Sb			1	0.039	ug/l	7.62	381.67	8.855E-04	Pulse	1.00	3
Se			1	0.278	ug/l	30.85	30.11	1.530E-03	Pulse	3.00	3

ISTD Table

Tune	Element	Mass	CPS	RSD(%)	ISTD Recovery%	Det	Time(sec)	Rep
1	Bi		10,541,138.00	1.07	90.1	Analog	0.50	3
1	Sc		344,120.32	0.35	82.3	Pulse	0.30	3
1	Ge		283,922.43	0.80	81.6	Pulse	0.30	3

Quantitation Report

Tune	Element	Mass	CPS	RSD(%)	ISTD Recovery%	Det	Time(sec)	Rep
1	In		2,967,148.01	0.18	82.6	Pulse	0.30	3
1	Tb		14,520,857.67	1.11	94.0	Analog	0.50	3
1	Lu		8,605,016.67	1.01	95.1	Analog	0.50	3
1	Ge		430,982.27	0.76	81.0	Pulse	0.30	3
1	Te		19,657.90	2.37	64.6	Pulse	0.50	3
1	Li		2,902.45	1.93	85.9	Pulse	0.30	3

Quantitation Report

File Name 054SMPL.d
File Path D:\2018\05-May\x\050718m1.b
Method File
Method Path
Acq Time 5/7/2018 13:20
Sample Name CRIA
Sample Type Sample
Comment
Prep Dilution 1.000
Auto Dilution N/A
Total Dilution 1.000
Operator Name admin
Acq Mode Spectrum
Cal Title
Cal Type External Calibration
Last Calib 5/7/2018 10:39
Bkg File
Bkg Mode Count Subtraction except for ISTD
Interference File
FQ Blank File
VIS Fit Point to Point

Tune Step **Tune File**
 1

FullQuant Table

Element	Mass	ISTD	Tune	Conc	Units	RSD(%)	CPS	Ratio	Det	Time(sec)	Rep
Cr			1	0.980	ug/l	2.29	21,878.26	6.761E-02	Pulse	0.50	3
As			1	0.976	ug/l	2.50	2,102.78	6.499E-03	Pulse	1.00	3
Mo			1	0.991	ug/l	3.40	15,222.19	3.075E-02	Pulse	0.50	3
Pb			1	0.956	ug/l	1.14	98,879.19	8.371E-03	Pulse	1.00	3
Be			1	1.072	ug/l	3.80	144.50	3.726E-04	Pulse	2.00	3
Ag			1	1.027	ug/l	0.61	61,043.85	1.233E-01	Pulse	0.50	3
Ba			1	0.999	ug/l	0.26	5,164.09	1.542E-03	Pulse	0.50	3
Tl			1	0.926	ug/l	0.82	138,399.56	1.172E-02	Pulse	0.50	3
Sn			1	1.188	ug/l	0.93	15,773.51	4.710E-03	Pulse	0.30	3
Sr			1	1.035	ug/l	3.31	11,700.33	3.494E-03	Pulse	0.50	3
[Pb]			1	0.960	ug/l	1.13	46,357.88	3.925E-03	Pulse	0.50	3
Ca			1	106.845	ug/l	1.69	4,834.61	1.247E-02	Pulse	0.50	3
Ti			1	1.014	ug/l	6.01	365.34	9.419E-04	Pulse	0.50	3
Na			1	104.263	ug/l	0.84	256,770.86	6.621E-01	Pulse	1.00	3
Mg			1	103.316	ug/l	0.94	105,858.85	2.730E-01	Pulse	1.00	3
K			1	101.462	ug/l	1.21	89,237.11	2.301E-01	Pulse	1.00	3
V			1	0.991	ug/l	2.45	15,683.00	4.044E-02	Pulse	0.50	3
Mn			1	0.965	ug/l	1.96	10,220.70	3.159E-02	Pulse	0.50	3
Fe			1	100.560	ug/l	0.80	1,717,603.67	5.308E+00	Pulse	0.50	3
Co			1	1.029	ug/l	0.72	41,319.27	1.277E-01	Pulse	0.50	3
Ni			1	1.000	ug/l	3.58	12,208.54	3.773E-02	Pulse	0.50	3
Cu			1	0.965	ug/l	1.51	45,732.57	1.413E-01	Pulse	0.50	3
Zn			1	1.815	ug/l	0.72	8,708.97	1.759E-02	Pulse	1.00	3
Cd			1	1.060	ug/l	0.82	7,379.50	1.491E-02	Pulse	0.50	3
Al			1	102.424	ug/l	2.74	28,942.89	7.464E-02	Pulse	1.00	3
Se			1	0.953	ug/l	6.95	167.00	5.955E-03	Pulse	3.00	3
Sb			1	0.989	ug/l	0.94	13,580.69	2.743E-02	Pulse	1.00	3
Se			1	0.807	ug/l	10.35	94.67	3.375E-03	Pulse	3.00	3

ISTD Table

Tune Element	Mass	CPS	RSD(%)	ISTD Recovery%	Det	Time(sec)	Rep
1 Bi		11,812,071.67	0.67	101.0	Analog	0.50	3

Quantitation Report

Tune	Element	Mass	CPS	RSD(%)	ISTD Recovery%	Det	Time(sec)	Rep
1	Sc		387,813.38	0.95	92.7	Pulse	0.30	3
1	Ge		323,574.34	0.30	92.9	Pulse	0.30	3
1	In		3,349,089.87	0.88	93.3	Pulse	0.30	3
1	Tb		15,404,605.00	0.21	99.7	Analog	0.50	3
1	Lu		8,941,832.33	1.13	98.8	Analog	0.50	3
1	Ge		495,066.21	0.21	93.1	Pulse	0.30	3
1	Te		28,044.77	0.98	92.2	Pulse	0.50	3
1	Li		3,141.37	0.64	93.0	Pulse	0.30	3

Quantitation Report

File Name 0555MPL.d
File Path D:\2018\05-May\x050718m1.b
Method File
Method Path
Acq Time 5/7/2018 13:24
Sample Name ICSA
Sample Type Sample
Comment
Prep Dilution 1.000
Auto Dilution N/A
Total Dilution 1.000
Operator Name admin
Acq Mode Spectrum
Cal Title
Cal Type External Calibration
Last Calib 5/7/2018 10:39
Bkg File
Bkg Mode Count Subtraction except for ISTD
Interference File
FQ Blank File
VIS Fit Point to Point

Tune Step **Tune File**
 1

FullQuant Table

Element	Mass	ISTD	Tune	Conc	Units	RSD(%)	CPS	Ratio	Det	Time(sec)	Rep
Cr			1	1.308	ug/l	1.93	25,064.75	8.905E-02	Pulse	0.50	3
As			1	0.089	ug/l	10.09	183.67	6.527E-04	Pulse	1.00	3
Mo			1	2145.193	ug/l	1.30	28,111,025.33	6.648E+01	Analog	0.50	3
Pb			1	0.112	ug/l	0.77	10,861.12	1.235E-03	Pulse	1.00	3
Be			1	0.015	ug/l	71.30	2.00	5.440E-06	Pulse	2.00	3
Ag			1	0.025	ug/l	5.79	1,331.39	3.148E-03	Pulse	0.50	3
Ba			1	0.088	ug/l	10.20	407.34	1.425E-04	Pulse	0.50	3
Tl			1	0.005	ug/l	2.48	670.02	7.616E-05	Pulse	0.50	3
Sn			1	0.080	ug/l	20.20	1,643.42	5.746E-04	Pulse	0.30	3
Sr			1	1.001	ug/l	2.79	9,697.18	3.391E-03	Pulse	0.50	3
[Pb]			1	0.110	ug/l	2.49	5,028.76	5.716E-04	Pulse	0.50	3
Ca			1	94718.260	ug/l	0.43	3,911,211.33	1.064E+01	Pulse	0.50	3
Tl			1	2038.020	ug/l	0.96	693,420.48	1.886E+00	Pulse	0.50	3
Na			1	100772.326	ug/l	0.76	226,278,693.33	6.154E+02	Analog	1.00	3
Mg			1	100089.551	ug/l	0.54	96,922,317.33	2.636E+02	Analog	1.00	3
K			1	104517.132	ug/l	0.50	75,441,565.33	2.052E+02	Analog	1.00	3
V			1	0.004	ug/l	72.76	668.68	1.819E-03	Pulse	0.50	3
Mn			1	0.225	ug/l	3.70	3,010.91	1.070E-02	Pulse	0.50	3
Fe			1	105115.878	ug/l	1.07	1,525,206,272.00	5.419E+03	Analog	0.50	3
Co			1	0.014	ug/l	7.34	529.34	1.881E-03	Pulse	0.50	3
Ni			1	0.050	ug/l	2.90	1,554.74	5.524E-03	Pulse	0.50	3
Cu			1	0.018	ug/l	24.74	14,567.52	5.176E-02	Pulse	0.50	3
Zn			1	1.318	ug/l	1.81	5,896.58	1.394E-02	Pulse	1.00	3
Cd			1	0.386	ug/l	1.81	2,298.82	5.436E-03	Pulse	0.50	3
Al			1	97947.347	ug/l	0.49	25,893,190.00	7.042E+01	Analog	1.00	3
Se			1	0.074	ug/l	21.38	24.00	1.152E-03	Pulse	3.00	3
Sb			1	0.047	ug/l	11.60	698.68	1.652E-03	Pulse	1.00	3
Se			1	0.014	ug/l	256.31	24.67	1.185E-03	Pulse	3.00	3

ISTD Table

Tune	Element	Mass	CPS	RSD(%)	ISTD Recovery%	Det	Time(sec)	Rep
1	Bi		8,797,596.00	0.57	75.2	Analog	0.50	3
1	Sc		367,674.97	0.22	87.9	Pulse	0.30	3
1	Ge		281,462.79	1.18	80.8	Pulse	0.30	3
1	In		2,859,837.39	1.01	79.7	Pulse	0.30	3
1	Tb		13,351,531.33	0.48	86.4	Analog	0.50	3
1	Lu		8,006,480.17	0.96	88.5	Analog	0.50	3
1	Ge		422,891.63	0.71	79.5	Pulse	0.30	3

Quantitation Report

Tune	Element	Mass	CPS	RSD(%)	ISTD Recovery%	Det	Time(sec)	Rep
1	Te		20,825.20	1.27	68.5	Pulse	0.50	3
1	Li		2,370.15	3.11	70.1	Pulse	0.30	3

Quantitation Report

File Name 056CCVA.d
File Path D:\2018\05-May\x050718m1.b
Method File
Method Path
Acq Time 5/7/2018 13:28
Sample Name CCV (Ag)
Sample Type CCV_Ag
Comment =std 4
Prep Dilution 1.000
Auto Dilution N/A
Total Dilution 1.000
Operator Name admin
Acq Mode Spectrum
Cal Title
Cal Type External Calibration
Last Calib 5/7/2018 10:39
Bkg File
Bkg Mode Count Subtraction except for ISTD
Interference File
FQ Blank File
VIS Fit Point to Point

Tune Step 1 **Tune File**

FullQuant Table

Element	Mass	ISTD	Tune	Conc	Units	RSD(%)	CPS	Ratio	Det	Time(sec)	Rep
Cr			1	49.716	ug/l	0.74	976,934.87	3.251E+00	Pulse	0.50	3
As			1	50.002	ug/l	0.22	99,064.28	3.296E-01	Pulse	1.00	3
Mo			1	49.993	ug/l	0.72	714,983.25	1.549E+00	Pulse	0.50	3
Pb			1	46.497	ug/l	0.78	4,318,837.17	3.933E-01	Pulse	1.00	3
Be			1	51.216	ug/l	1.11	6,370.67	1.778E-02	Pulse	2.00	3
Ag			1	50.809	ug/l	0.38	2,811,413.08	6.092E+00	Pulse	0.50	3
Ba			1	50.399	ug/l	1.50	239,688.52	7.746E-02	Pulse	0.50	3
Tl			1	48.859	ug/l	0.62	6,782,155.17	6.176E-01	Analog	0.50	3
Sn			1	50.608	ug/l	1.20	585,083.08	1.891E-01	Pulse	0.30	3
Sr			1	49.446	ug/l	0.79	462,949.51	1.496E-01	Pulse	0.50	3
[Pb]			1	46.585	ug/l	0.45	2,018,420.88	1.838E-01	Pulse	0.50	3
Ca			1	4932.385	ug/l	0.44	198,581.95	5.544E-01	Pulse	0.50	3
Tl			1	49.708	ug/l	1.38	16,478.96	4.600E-02	Pulse	0.50	3
Na			1	5026.750	ug/l	1.33	11,005,389.00	3.072E+01	Analog	1.00	3
Mg			1	5065.865	ug/l	1.08	4,779,345.83	1.334E+01	Analog	1.00	3
K			1	4938.527	ug/l	0.88	3,483,289.50	9.725E+00	Pulse	1.00	3
V			1	50.134	ug/l	0.62	703,025.29	1.963E+00	Pulse	0.50	3
Mn			1	49.150	ug/l	0.48	418,018.73	1.391E+00	Pulse	0.50	3
Fe			1	5143.198	ug/l	0.55	79,725,357.33	2.653E+02	Analog	0.50	3
Co			1	49.886	ug/l	0.59	1,857,648.87	6.182E+00	Pulse	0.50	3
Ni			1	50.804	ug/l	0.57	518,989.13	1.727E+00	Pulse	0.50	3
Cu			1	51.450	ug/l	0.57	1,477,966.00	4.918E+00	Pulse	0.50	3
Zn			1	51.711	ug/l	1.28	176,915.45	3.833E-01	Pulse	1.00	3
Cd			1	51.274	ug/l	0.87	332,722.81	7.210E-01	Pulse	0.50	3
Al			1	4819.683	ug/l	0.47	1,241,626.17	3.466E+00	Pulse	1.00	3
Se			1	47.156	ug/l	1.81	6,580.91	2.584E-01	Pulse	3.00	3
Sb			1	50.412	ug/l	0.38	637,290.16	1.381E+00	Pulse	1.00	3
Se			1	47.691	ug/l	2.91	3,385.52	1.329E-01	Pulse	3.00	3

ISTD Table

Tune	Element	Mass	CPS	RSD(%)	ISTD Recovery%	Det	Time(sec)	Rep
1	Bi		10,982,518.00	0.55	93.9	Analog	0.50	3
1	Sc		358,195.94	0.86	85.6	Pulse	0.30	3
1	Ge		300,526.97	0.97	86.3	Pulse	0.30	3

Quantitation Report

Tune	Element	Mass	CPS	RSD(%)	ISTD Recovery%	Det	Time(sec)	Rep
1	In		3,094,493.35	0.99	86.2	Pulse	0.30	3
1	Tb		14,744,795.00	1.02	95.5	Analog	0.50	3
1	Lu		8,656,739.00	0.78	95.6	Analog	0.50	3
1	Ge		461,509.37	0.64	86.8	Pulse	0.30	3
1	Te		25,469.73	0.24	83.8	Pulse	0.50	3
1	Li		2,680.20	3.78	79.3	Pulse	0.30	3

Quantitation Report

File Name 057_CCV.d
File Path D:\2018\05-May\x\050718m1.b
Method File
Method Path
Acq Time 5/7/2018 13:31
Sample Name CCV
Sample Type CCV
Comment =std 5
Prep Dilution 1.000
Auto Dilution N/A
Total Dilution 1.000
Operator Name admin
Acq Mode Spectrum
Cal Title
Cal Type External Calibration
Last Calib 5/7/2018 10:39
Bkg File
Bkg Mode Count Subtraction except for ISTD
Interference File
FQ Blank File
VIS Fit Point to Point

Tune Step **Tune File**
 1

FullQuant Table

Element	Mass	ISTD	Tune	Conc	Units	RSD(%)	CPS	Ratio	Det	Time(sec)	Rep
Cr			1	98.201	ug/l	0.39	1,959,366.75	6.417E+00	Pulse	0.50	3
As			1	99.487	ug/l	0.32	200,237.38	6.558E-01	Pulse	1.00	3
Mo			1	99.384	ug/l	0.58	1,425,048.75	3.080E+00	Pulse	0.50	3
Pb			1	98.247	ug/l	0.32	8,922,611.00	8.306E-01	Analog	1.00	3
Be			1	98.996	ug/l	0.57	12,617.24	3.438E-02	Pulse	2.00	3
Ag			1	98.349	ug/l	1.20	5,455,961.83	1.179E+01	Pulse	0.50	3
Ba			1	99.652	ug/l	0.94	474,574.22	1.532E-01	Pulse	0.50	3
Tl			1	97.821	ug/l	0.72	13,281,220.00	1.236E+00	Analog	0.50	3
Sn			1	100.609	ug/l	1.14	1,163,921.66	3.756E-01	Pulse	0.30	3
Sr			1	99.888	ug/l	0.28	935,325.98	3.019E-01	Pulse	0.50	3
[Pb]			1	92.864	ug/l	1.55	3,933,889.92	3.662E-01	Pulse	0.50	3
Ca			1	9742.495	ug/l	1.24	401,744.27	1.095E+00	Pulse	0.50	3
Ti			1	97.870	ug/l	0.42	33,243.46	9.057E-02	Pulse	0.50	3
Na			1	9966.921	ug/l	1.00	22,349,302.00	6.089E+01	Analog	1.00	3
Mg			1	9921.708	ug/l	0.76	9,591,220.00	2.613E+01	Analog	1.00	3
K			1	10066.573	ug/l	0.71	7,263,710.83	1.979E+01	Analog	1.00	3
V			1	99.194	ug/l	0.49	1,424,729.25	3.882E+00	Pulse	0.50	3
Mn			1	97.852	ug/l	0.42	844,200.92	2.765E+00	Pulse	0.50	3
Fe			1	10118.590	ug/l	0.39	159,313,717.33	5.218E+02	Analog	0.50	3
Co			1	97.603	ug/l	0.46	3,692,676.25	1.209E+01	Pulse	0.50	3
Ni			1	99.552	ug/l	0.06	1,032,089.77	3.380E+00	Pulse	0.50	3
Cu			1	99.843	ug/l	0.51	2,899,545.00	9.496E+00	Pulse	0.50	3
Zn			1	101.040	ug/l	0.48	344,692.04	7.450E-01	Pulse	1.00	3
Cd			1	100.989	ug/l	1.09	657,022.42	1.420E+00	Pulse	0.50	3
Al			1	9602.900	ug/l	0.85	2,534,461.75	6.905E+00	Pulse	1.00	3
Se			1	95.100	ug/l	1.07	13,158.52	5.203E-01	Pulse	3.00	3
Sb			1	99.601	ug/l	0.53	1,262,204.54	2.728E+00	Pulse	1.00	3
Se			1	96.244	ug/l	0.49	6,754.53	2.671E-01	Pulse	3.00	3

ISTD Table

Tune	Element	Mass	CPS	RSD(%)	ISTD Recovery%	Det	Time(sec)	Rep
1	Bi		10,742,287.67	0.74	91.8	Analog	0.50	3
1	Sc		367,036.14	0.40	87.8	Pulse	0.30	3
1	Ge		305,333.26	0.51	87.7	Pulse	0.30	3
1	In		3,098,595.78	0.24	86.3	Pulse	0.30	3
1	Tb		14,738,724.00	0.74	95.4	Analog	0.50	3
1	Lu		8,629,407.00	0.30	95.3	Analog	0.50	3

Quantitation Report

Tune	Element	Mass	CPS	RSD(%)	ISTD Recovery%	Det	Time(sec)	Rep
1	Ge		462,706.27	0.25	87.0	Pulse	0.30	3
1	Te		25,289.48	0.80	83.2	Pulse	0.50	3
1	Li		2,731.31	2.51	80.8	Pulse	0.30	3

Quantitation Report

File Name 058_CCB.d
File Path D:\2018\05-May\x050718m1.b
Method File
Method Path
Acq Time 5/7/2018 13:35
Sample Name CCB
Sample Type CCB
Comment
Prep Dilution 1.000
Auto Dilution N/A
Total Dilution 1.000
Operator Name admin
Acq Mode Spectrum
Cal Title
Cal Type External Calibration
Last Calib 5/7/2018 10:39
Bkg File
Bkg Mode Count Subtraction except for ISTD
Interference File
FQ Blank File
VIS Fit Point to Point

Tune Step	Tune File
1	

FullQuant Table

Element	Mass	ISTD	Tune	Conc	Units	RSD(%)	CPS	Ratio	Det	Time(sec)	Rep
Cr			1	0.692	ug/l	3.19	15,097.88	4.883E-02	Pulse	0.50	3
As			1	0.017	ug/l	18.08	54.67	1.766E-04	Pulse	1.00	3
Mo			1	0.053	ug/l	7.41	801.36	1.686E-03	Pulse	0.50	3
Pb			1	0.012	ug/l	4.11	4,492.26	3.909E-04	Pulse	1.00	3
Be			1	0.019	ug/l	36.63	2.50	6.856E-06	Pulse	2.00	3
Ag			1	0.014	ug/l	2.47	838.02	1.763E-03	Pulse	0.50	3
Ba			1	0.019	ug/l	28.32	114.00	3.567E-05	Pulse	0.50	3
Tl			1	0.034	ug/l	4.41	5,007.42	4.357E-04	Pulse	0.50	3
Sn			1	0.045	ug/l	25.74	1,425.62	4.461E-04	Pulse	0.30	3
Sr			1	0.024	ug/l	7.58	1,414.06	4.425E-04	Pulse	0.50	3
[Pb]			1	0.011	ug/l	27.71	2,080.80	1.811E-04	Pulse	0.50	3
Ca			1	4.817	ug/l	12.77	367.34	1.008E-03	Pulse	0.50	3
Tl			1	0.042	ug/l	35.12	15.33	4.201E-05	Pulse	0.50	3
Na			1	5.035	ug/l	2.98	20,471.41	5.615E-02	Pulse	1.00	3
Mg			1	3.180	ug/l	1.82	3,371.62	9.248E-03	Pulse	1.00	3
K			1	2.569	ug/l	14.97	13,123.69	3.600E-02	Pulse	1.00	3
V			1	-0.003	ug/l	-80.71	558.68	1.533E-03	Pulse	0.50	3
Mn			1	1.084	ug/l	2.29	10,806.35	3.494E-02	Pulse	0.50	3
Fe			1	3.374	ug/l	4.36	92,129.58	2.980E-01	Pulse	0.50	3
Co			1	0.018	ug/l	4.13	750.02	2.425E-03	Pulse	0.50	3
Ni			1	0.192	ug/l	4.26	3,192.27	1.032E-02	Pulse	0.50	3
Cu			1	-0.009	ug/l	-159.96	15,217.34	4.921E-02	Pulse	0.50	3
Zn			1	0.192	ug/l	10.04	2,703.86	5.689E-03	Pulse	1.00	3
Cd			1	0.015	ug/l	3.02	106.67	2.245E-04	Pulse	0.50	3
Al			1	33.424	ug/l	2.22	9,125.75	2.503E-02	Pulse	1.00	3
Se			1	0.007	ug/l	355.80	21.22	7.827E-04	Pulse	3.00	3
Sb			1	0.023	ug/l	11.38	470.34	9.897E-04	Pulse	1.00	3
Se			1	-0.093	ug/l	-11.31	24.11	8.873E-04	Pulse	3.00	3

Quantitation Report

ISTD Table

Tune	Element	Mass	CPS	RSD(%)	ISTD Recovery%	Det	Time(sec)	Rep
1	Bi		11,491,989.00	0.70	98.3	Analog	0.50	3
1	Sc		364,577.63	0.48	87.2	Pulse	0.30	3
1	Ge		309,277.24	1.33	88.8	Pulse	0.30	3
1	In		3,195,778.28	0.09	89.0	Pulse	0.30	3
1	Tb		14,936,016.67	1.18	96.7	Analog	0.50	3
1	Lu		8,739,197.67	1.04	96.6	Analog	0.50	3
1	Ge		475,240.69	0.14	89.3	Pulse	0.30	3
1	Te		27,188.89	2.45	89.4	Pulse	0.50	3
1	Li		2,941.34	3.31	87.0	Pulse	0.30	3

Quantitation Report

File Name 059SMPL.d
File Path D:\2018\05-May\x050718m1.b
Method File
Method Path
Acq Time 5/7/2018 13:39
Sample Name ICSAB
Sample Type Sample
Comment
Prep Dilution 1.000
Auto Dilution N/A
Total Dilution 1.000
Operator Name admin
Acq Mode Spectrum
Cal Title
Cal Type External Calibration
Last Calib 5/7/2018 10:39
Bkg File
Bkg Mode Count Subtraction except for ISTD
Interference File
FQ Blank File
VIS Fit Point to Point

Tune Step	Tune File
1	

FullQuant Table

Element	Mass	ISTD	Tune	Conc	Units	RSD(%)	CPS	Ratio	Det	Time(sec)	Rep
Cr			1	21.541	ug/l	1.25	402,999.04	1.410E+00	Pulse	0.50	3
As			1	19.630	ug/l	0.45	36,986.28	1.295E-01	Pulse	1.00	3
Mo			1	2120.861	ug/l	1.33	28,251,717.33	6.572E+01	Analog	0.50	3
Pb			1	0.127	ug/l	1.93	12,045.91	1.365E-03	Pulse	1.00	3
Be			1	0.015	ug/l	79.34	2.17	5.760E-06	Pulse	2.00	3
Ag			1	17.055	ug/l	1.21	879,044.83	2.045E+00	Pulse	0.50	3
Ba			1	0.087	ug/l	11.58	406.68	1.408E-04	Pulse	0.50	3
Tl			1	0.009	ug/l	17.80	1,095.38	1.242E-04	Pulse	0.50	3
Sn			1	0.090	ug/l	7.35	1,711.21	6.131E-04	Pulse	0.30	3
Sr			1	1.000	ug/l	1.24	9,782.56	3.388E-03	Pulse	0.50	3
[Pb]			1	0.131	ug/l	1.20	5,785.66	6.556E-04	Pulse	0.50	3
Ca			1	94147.329	ug/l	0.19	3,972,344.83	1.057E+01	Pulse	0.50	3
Tl			1	2011.680	ug/l	0.35	699,375.23	1.862E+00	Pulse	0.50	3
Na			1	99734.257	ug/l	0.50	228,829,061.33	6.091E+02	Analog	1.00	3
Mg			1	98971.832	ug/l	0.56	97,927,717.33	2.607E+02	Analog	1.00	3
K			1	103538.279	ug/l	0.52	76,363,800.00	2.033E+02	Analog	1.00	3
V			1	0.003	ug/l	45.51	661.35	1.760E-03	Pulse	0.50	3
Mn			1	20.429	ug/l	0.93	165,913.49	5.807E-01	Pulse	0.50	3
Fe			1	104392.405	ug/l	0.94	1,537,712,426.67	5.382E+03	Analog	0.50	3
Co			1	19.297	ug/l	1.35	683,229.54	2.391E+00	Pulse	0.50	3
Ni			1	18.616	ug/l	0.64	181,488.30	6.352E-01	Pulse	0.50	3
Cu			1	18.344	ug/l	0.48	510,179.80	1.786E+00	Pulse	0.50	3
Zn			1	19.512	ug/l	0.69	63,325.67	1.473E-01	Pulse	1.00	3
Cd			1	18.470	ug/l	1.83	111,635.85	2.597E-01	Pulse	0.50	3
Al			1	97010.273	ug/l	0.32	26,203,858.00	6.975E+01	Analog	1.00	3
Se			1	0.051	ug/l	21.35	21.44	1.024E-03	Pulse	3.00	3
Sb			1	0.049	ug/l	9.42	733.35	1.706E-03	Pulse	1.00	3
Se			1	0.059	ug/l	146.73	27.44	1.309E-03	Pulse	3.00	3

ISTD Table

Tune	Element	Mass	CPS	RSD(%)	ISTD Recovery%	Det	Time(sec)	Rep
1	Bi		8,825,337.67	0.76	75.5	Analog	0.50	3
1	Sc		375,683.26	0.29	89.8	Pulse	0.30	3
1	Ge		285,717.16	0.23	82.1	Pulse	0.30	3
1	In		2,888,003.01	0.99	80.4	Pulse	0.30	3
1	Tb		13,554,716.67	0.39	87.8	Analog	0.50	3
1	Lu		8,043,629.50	0.90	88.9	Analog	0.50	3
1	Ge		429,889.73	0.96	80.8	Pulse	0.30	3

Quantitation Report

Tune	Element	Mass	CPS	RSD(%)	ISTD Recovery%	Det	Time(sec)	Rep
1	Te		20,936.67	0.98	68.9	Pulse	0.50	3
1	Li		2,231.25	6.98	66.0	Pulse	0.30	3

Quantitation Report

File Name 060CCVA.d
File Path D:\2018\05-May\x050718m1.b
Method File
Method Path
Acq Time 5/7/2018 13:42
Sample Name CCV (Ag)
Sample Type CCV_Ag
Comment =std 4
Prep Dilution 1.000
Auto Dilution N/A
Total Dilution 1.000
Operator Name admin
Acq Mode Spectrum
Cal Title
Cal Type External Calibration
Last Calib 5/7/2018 10:39
Bkg File
Bkg Mode Count Subtraction except for ISTD
Interference File
FQ Blank File
VIS Fit Point to Point

Tune Step 1 **Tune File**

FullQuant Table

Element	Mass	ISTD	Tune	Conc	Units	RSD(%)	CPS	Ratio	Det	Time(sec)	Rep
Cr			1	49.537	ug/l	0.46	970,002.12	3.239E+00	Pulse	0.50	3
As			1	50.787	ug/l	0.28	100,269.48	3.348E-01	Pulse	1.00	3
Mo			1	49.952	ug/l	0.19	712,005.25	1.548E+00	Pulse	0.50	3
Pb			1	46.452	ug/l	1.20	4,325,282.67	3.929E-01	Pulse	1.00	3
Be			1	50.814	ug/l	0.11	6,217.95	1.764E-02	Pulse	2.00	3
Ag			1	50.591	ug/l	0.34	2,789,987.08	6.066E+00	Pulse	0.50	3
Ba			1	50.151	ug/l	0.14	239,097.38	7.708E-02	Pulse	0.50	3
Tl			1	49.125	ug/l	0.70	6,836,047.50	6.209E-01	Analog	0.50	3
Sn			1	50.423	ug/l	0.91	584,379.51	1.884E-01	Pulse	0.30	3
Sr			1	48.956	ug/l	0.56	459,485.09	1.481E-01	Pulse	0.50	3
[Pb]			1	46.734	ug/l	0.81	2,029,918.96	1.844E-01	Pulse	0.50	3
Ca			1	4982.376	ug/l	1.68	197,339.41	5.600E-01	Pulse	0.50	3
Tl			1	49.563	ug/l	2.56	16,163.36	4.587E-02	Pulse	0.50	3
Na			1	5061.294	ug/l	0.15	10,901,141.67	3.093E+01	Analog	1.00	3
Mg			1	5098.614	ug/l	0.60	4,732,443.33	1.343E+01	Analog	1.00	3
K			1	4968.865	ug/l	0.13	3,447,933.50	9.784E+00	Pulse	1.00	3
V			1	50.520	ug/l	0.30	696,971.40	1.978E+00	Pulse	0.50	3
Mn			1	49.174	ug/l	0.29	416,761.02	1.392E+00	Pulse	0.50	3
Fe			1	5124.253	ug/l	0.29	79,152,272.00	2.643E+02	Analog	0.50	3
Co			1	50.051	ug/l	0.66	1,857,310.04	6.202E+00	Pulse	0.50	3
Ni			1	51.062	ug/l	0.71	519,775.89	1.736E+00	Pulse	0.50	3
Cu			1	51.120	ug/l	0.89	1,463,460.46	4.887E+00	Pulse	0.50	3
Zn			1	51.478	ug/l	0.13	175,538.86	3.816E-01	Pulse	1.00	3
Cd			1	51.568	ug/l	0.55	333,510.42	7.251E-01	Pulse	0.50	3
Al			1	4810.202	ug/l	0.30	1,219,096.63	3.459E+00	Pulse	1.00	3
Se			1	47.161	ug/l	0.81	6,580.91	2.584E-01	Pulse	3.00	3
Sb			1	50.200	ug/l	0.30	632,468.25	1.375E+00	Pulse	1.00	3
Se			1	47.419	ug/l	1.22	3,365.96	1.322E-01	Pulse	3.00	3

ISTD Table

Tune	Element	Mass	CPS	RSD(%)	ISTD Recovery%	Det	Time(sec)	Rep
1	Bi		11,009,860.67	0.49	94.1	Analog	0.50	3
1	Sc		352,394.03	0.21	84.3	Pulse	0.30	3
1	Ge		299,479.27	0.54	86.0	Pulse	0.30	3

Quantitation Report

Tune	Element	Mass	CPS	RSD(%)	ISTD Recovery%	Det	Time(sec)	Rep
1	In		3,101,943.49	0.26	86.4	Pulse	0.30	3
1	Tb		14,766,298.33	0.49	95.6	Analog	0.50	3
1	Lu		8,637,300.00	0.62	95.4	Analog	0.50	3
1	Ge		459,957.34	0.25	86.5	Pulse	0.30	3
1	Te		25,466.41	0.57	83.8	Pulse	0.50	3
1	Li		2,683.53	4.86	79.4	Pulse	0.30	3

Quantitation Report

File Name 061_CCV.d
File Path D:\2018\05-May\x\050718m1.b
Method File
Method Path
Acq Time 5/7/2018 13:46
Sample Name CCV
Sample Type CCV
Comment =std 5
Prep Dilution 1.000
Auto Dilution N/A
Total Dilution 1.000
Operator Name admin
Acq Mode Spectrum
Cal Title
Cal Type External Calibration
Last Calib 5/7/2018 10:39
Bkg File
Bkg Mode Count Subtraction except for ISTD
Interference File
FQ Blank File
VIS Fit Point to Point

Tune Step 1
Tune File

FullQuant Table

Element	Mass	ISTD	Tune	Conc	Units	RSD(%)	CPS	Ratio	Det	Time(sec)	Rep
Cr			1	98.319	ug/l	0.96	1,927,851.46	6.425E+00	Pulse	0.50	3
As			1	99.698	ug/l	1.11	197,193.95	6.572E-01	Pulse	1.00	3
Mo			1	98.945	ug/l	1.19	1,414,384.41	3.066E+00	Pulse	0.50	3
Pb			1	97.573	ug/l	0.20	8,817,610.33	8.249E-01	Analog	1.00	3
Be			1	99.202	ug/l	1.43	12,554.04	3.445E-02	Pulse	2.00	3
Ag			1	96.951	ug/l	0.22	5,362,201.50	1.162E+01	Pulse	0.50	3
Ba			1	98.102	ug/l	1.44	466,538.51	1.508E-01	Pulse	0.50	3
Tl			1	97.064	ug/l	0.79	13,113,750.33	1.227E+00	Analog	0.50	3
Sn			1	99.522	ug/l	1.69	1,149,728.81	3.716E-01	Pulse	0.30	3
Sr			1	98.061	ug/l	0.54	917,103.81	2.963E-01	Pulse	0.50	3
[Pb]			1	92.378	ug/l	0.38	3,894,191.25	3.643E-01	Pulse	0.50	3
Ca			1	9648.836	ug/l	0.30	395,101.21	1.084E+00	Pulse	0.50	3
Ti			1	98.539	ug/l	1.88	33,233.50	9.119E-02	Pulse	0.50	3
Na			1	9861.748	ug/l	0.14	21,959,055.33	6.025E+01	Analog	1.00	3
Mg			1	9789.762	ug/l	0.31	9,397,497.67	2.578E+01	Analog	1.00	3
K			1	9929.810	ug/l	0.34	7,115,027.67	1.952E+01	Analog	1.00	3
V			1	98.048	ug/l	0.71	1,398,443.25	3.837E+00	Pulse	0.50	3
Mn			1	97.435	ug/l	0.95	826,099.73	2.753E+00	Pulse	0.50	3
Fe			1	10129.414	ug/l	0.82	156,731,776.00	5.223E+02	Analog	0.50	3
Co			1	97.735	ug/l	0.54	3,633,851.92	1.211E+01	Pulse	0.50	3
Ni			1	99.567	ug/l	0.33	1,014,431.58	3.381E+00	Pulse	0.50	3
Cu			1	99.424	ug/l	0.81	2,837,598.00	9.457E+00	Pulse	0.50	3
Zn			1	99.342	ug/l	0.93	337,900.73	7.325E-01	Pulse	1.00	3
Cd			1	99.596	ug/l	1.56	645,980.25	1.400E+00	Pulse	0.50	3
Al			1	9403.520	ug/l	0.50	2,464,556.83	6.762E+00	Pulse	1.00	3
Se			1	96.046	ug/l	0.73	12,788.61	5.255E-01	Pulse	3.00	3
Sb			1	98.524	ug/l	0.93	1,244,727.50	2.698E+00	Pulse	1.00	3
Se			1	96.667	ug/l	1.56	6,528.79	2.683E-01	Pulse	3.00	3

ISTD Table

Tune	Element	Mass	CPS	RSD(%)	ISTD Recovery%	Det	Time(sec)	Rep
1	Bi		10,689,089.00	0.21	91.4	Analog	0.50	3
1	Sc		364,464.33	0.73	87.1	Pulse	0.30	3
1	Ge		300,061.41	0.43	86.2	Pulse	0.30	3
1	In		3,094,826.27	1.74	86.2	Pulse	0.30	3
1	Tb		14,619,776.33	0.39	94.7	Analog	0.50	3
1	Lu		8,597,839.67	0.79	95.0	Analog	0.50	3

Quantitation Report

Tune	Element	Mass	CPS	RSD(%)	ISTD Recovery%	Det	Time(sec)	Rep
1	Ge		461,307.86	0.82	86.7	Pulse	0.30	3
1	Te		24,336.89	1.19	80.0	Pulse	0.50	3
1	Li		2,644.63	5.67	78.3	Pulse	0.30	3

Quantitation Report

File Name 062_CCB.d
File Path D:\2018\05-May\x050718m1.b
Method File
Method Path
Acq Time 5/7/2018 13:49
Sample Name CCB
Sample Type CCB
Comment
Prep Dilution 1.000
Auto Dilution N/A
Total Dilution 1.000
Operator Name admin
Acq Mode Spectrum
Cal Title
Cal Type External Calibration
Last Calib 5/7/2018 10:39
Bkg File
Bkg Mode Count Subtraction except for ISTD
Interference File
FQ Blank File
VIS Fit Point to Point

Tune Step **Tune File**
 1

FullQuant Table

Element	Mass	ISTD	Tune	Conc	Units	RSD(%)	CPS	Ratio	Det	Time(sec)	Rep
Cr			1	0.719	ug/l	0.38	14,211.20	5.055E-02	Pulse	0.50	3
As			1	0.021	ug/l	15.56	57.67	2.051E-04	Pulse	1.00	3
Mo			1	0.077	ug/l	14.28	1,049.38	2.435E-03	Pulse	0.50	3
Pb			1	0.013	ug/l	16.34	4,148.51	3.988E-04	Pulse	1.00	3
Be			1	0.019	ug/l	25.49	2.33	7.089E-06	Pulse	2.00	3
Ag			1	0.016	ug/l	8.83	888.03	2.059E-03	Pulse	0.50	3
Ba			1	0.021	ug/l	22.71	111.33	3.853E-05	Pulse	0.50	3
Tl			1	0.038	ug/l	12.29	5,094.11	4.899E-04	Pulse	0.50	3
Sn			1	0.051	ug/l	5.66	1,346.73	4.655E-04	Pulse	0.30	3
Sr			1	0.030	ug/l	4.95	1,330.05	4.598E-04	Pulse	0.50	3
[Pb]			1	0.013	ug/l	19.14	1,976.12	1.900E-04	Pulse	0.50	3
Ca			1	6.367	ug/l	23.14	388.67	1.182E-03	Pulse	0.50	3
Tl			1	0.049	ug/l	0.92	16.00	4.866E-05	Pulse	0.50	3
Na			1	6.901	ug/l	2.06	22,212.27	6.755E-02	Pulse	1.00	3
Mg			1	4.227	ug/l	4.47	3,948.06	1.200E-02	Pulse	1.00	3
K			1	5.108	ug/l	5.18	13,475.60	4.098E-02	Pulse	1.00	3
V			1	-0.003	ug/l	-9.96	510.01	1.551E-03	Pulse	0.50	3
Mn			1	1.034	ug/l	0.54	9,428.30	3.354E-02	Pulse	0.50	3
Fe			1	4.208	ug/l	6.19	95,842.17	3.410E-01	Pulse	0.50	3
Co			1	0.018	ug/l	13.15	686.68	2.444E-03	Pulse	0.50	3
Ni			1	0.200	ug/l	7.16	2,975.57	1.059E-02	Pulse	0.50	3
Cu			1	-0.013	ug/l	-67.23	13,728.90	4.884E-02	Pulse	0.50	3
Zn			1	0.210	ug/l	17.95	2,512.51	5.827E-03	Pulse	1.00	3
Cd			1	0.016	ug/l	22.22	98.00	2.273E-04	Pulse	0.50	3
Al			1	34.248	ug/l	1.32	8,425.45	2.563E-02	Pulse	1.00	3
Se			1	0.026	ug/l	207.98	21.89	8.862E-04	Pulse	3.00	3
Sb			1	0.030	ug/l	9.62	501.34	1.162E-03	Pulse	1.00	3
Se			1	-0.034	ug/l	-408.78	26.11	1.051E-03	Pulse	3.00	3

Quantitation Report

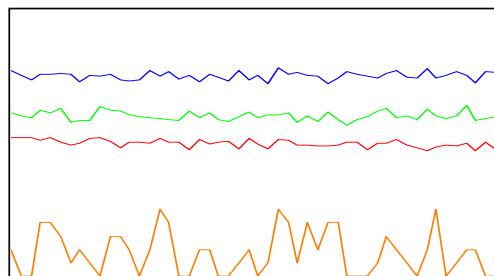
ISTD Table

Tune	Element	Mass	CPS	RSD(%)	ISTD Recovery%	Det	Time(sec)	Rep
1	Bi		10,400,702.67	0.90	88.9	Analog	0.50	3
1	Sc		328,814.19	0.85	78.6	Pulse	0.30	3
1	Ge		281,101.65	0.67	80.7	Pulse	0.30	3
1	In		2,892,834.61	0.87	80.6	Pulse	0.30	3
1	Tb		13,457,770.33	1.13	87.1	Analog	0.50	3
1	Lu		7,807,410.50	0.40	86.3	Analog	0.50	3
1	Ge		431,254.66	0.59	81.1	Pulse	0.30	3
1	Te		24,766.76	2.02	81.5	Pulse	0.50	3
1	Li		2,577.96	4.82	76.3	Pulse	0.30	3

Tune Report

Batch Folder D:\2018\05-May\x050718m1.b
Acq. Date-Time 5/7/2018 9:59
Report Comment 050718TUNE8
Instrument Name G3281A JP12151709

[2]



Mass	Range	Count (Actual)	Response (Actual) [cps/ug/l]	Response (Required) [cps/ug/l]	Response (Flag)
59	10000	4972	49723.27	5000.00	
89	5000	3002	30016.69	5000.00	
205	20000	15016	150160.03	5000.00	
78	20	2			

Mass	Resp Ratio (Actual)	Resp Ratio (Required)	Resp Ratio (Flag)
59		-	
89		-	
205		-	
78		-	

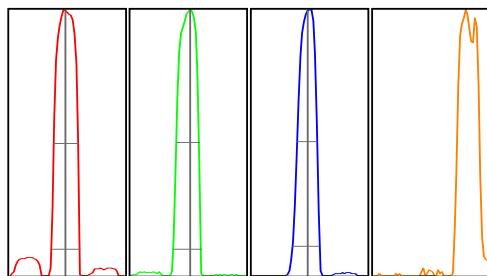
Mass	RSD% (Actual)	RSD% (Required)	RSD% (Flag)
59	2.88	8.00	
89	2.86	8.00	
205	1.97	8.00	
78	92.75		

Mass	Background (Actual)	Background (Required)	Background (Flag)
59	0.00	2	
89	0.00	2	
205	0.40	2	
78	0.00	5	

Ratio 156/140 0.254 %
Ratio 70/140 1.645 %

Integration Time [sec] 0.1 **Sampling Period [sec]** 0.412

Tune Report



Mass	Peak Height	Axis (Actual)	Axis (Required)	Axis (Flag)	W-50%	W-10% (Actual)	W-10% (Required)	W-10% (Flag)
59	4818.89	59.00	58.9 - 59.1		0.62	0.725	0.900	
89	3039.82	89.05	88.9 - 89.1		0.57	0.702	0.900	
205	15283.36	205.00	204.9 - 205.1		0.50	0.692	0.900	
78	0.00	77.90	-		0.35	0.350	-	

Integration Time [sec]

0.1 Acquisition Time [sec]

29.92 Y Axis Linear

Tune Parameters

Plasma Paramters

RF Power	1600 W	Nebulizer Pump	0.10 rps
RF Matching	1.70 V	S/C Temp	2 °C
Smpl Depth	8.5 mm	Gas Switch	Dilution Gas
Carrier Gas	0.80 L/min	Makeup/Dilution Gas	0.35 L/min
Option Gas	0.0 %		

Lenses Parameters

Extract 1	0.0 V	Cell Entrance	-30 V
Extract 2	-150.0 V	Cell Exit	-70 V
Omega Bias	-80 V	Deflect	2.8 V
Omega Lens	8.3 V	Plate Bias	-60 V

Cell Parameters

Use Gas	true	OctP Bias	-18.0 V
He Flow	5.0 mL/min	OctP RF	190 V
H2 Flow	0.0 mL/min	Energy Discrimination	3.0 V
3rd Gas Flow	0 %		

	Sensitivity					
	Channel 1 Count	Channel 1 Mass	Channel 1 RSD%	Channel 2 Count	Channel 2 Mass	Channel 2 RSD%
Created Date 5/7/2018 9:08 AM	41992415	7	10.628003	20903.013	89	11.830999
				15119.169		205
					12.403401	156/140
						70/140

			Background		
Integration Time	Oxide Ratio	Doubly Charged Ratio	Sampling Period	Channel 1 Count	Channel 1 Mass
0.100 sec	1.08 %	15.10 %	0.311 sec	2.2500005	7

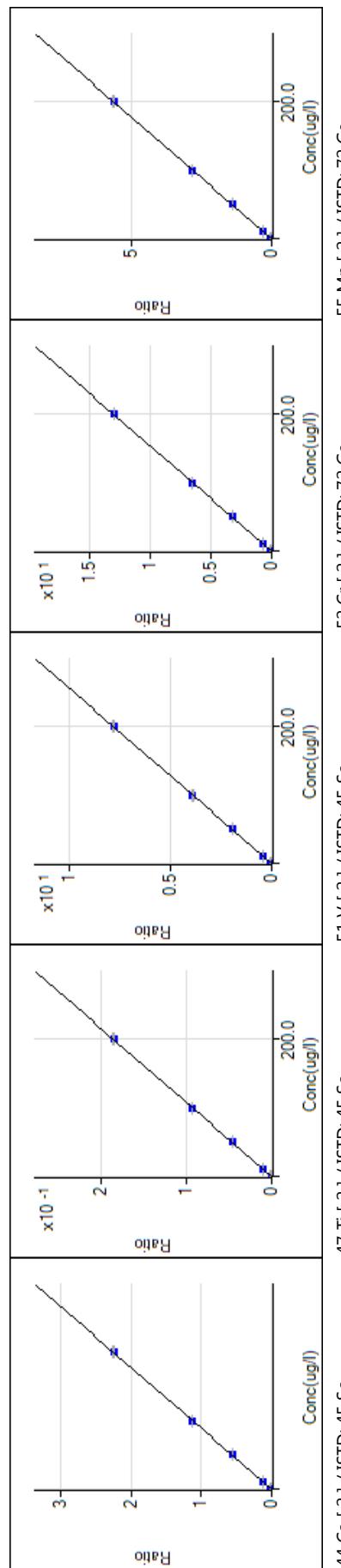
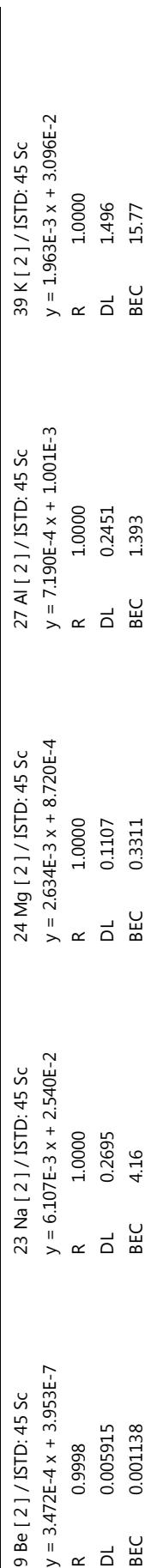
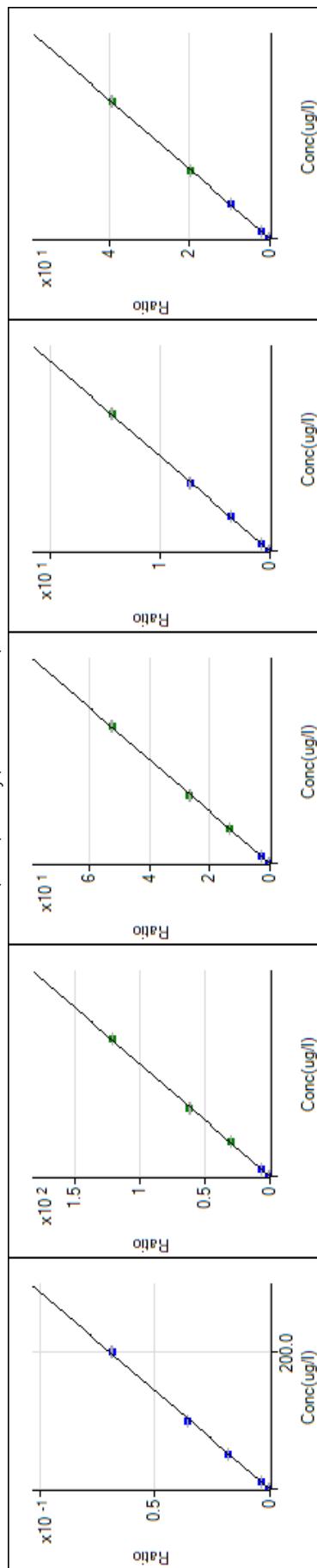
Channel 2 Count	Channel 2 Mass	Channel 3 Count	Channel 3 Mass	Acquisition Time	Channel 1 Mass
3.9000007	89	20.450019	205	00:00:23	7

Resolution/Axis

Channel Axis	Channel 1 Height	Channel 1 W-10%	Channel 1 W-50%	Channel 1 Mass	Channel 2 Axis	Channel 2 Height	Channel 2 Time	Channel 2 W-10%	Channel 2 W-50%	Channel 3 Mass	Channel 3 Axis	Channel 3 Height
7	4087.5505	0.7702075	0.6655947	89	89	20694.678	0.100 sec	0.7295561	0.5967842	205	205	14820.484

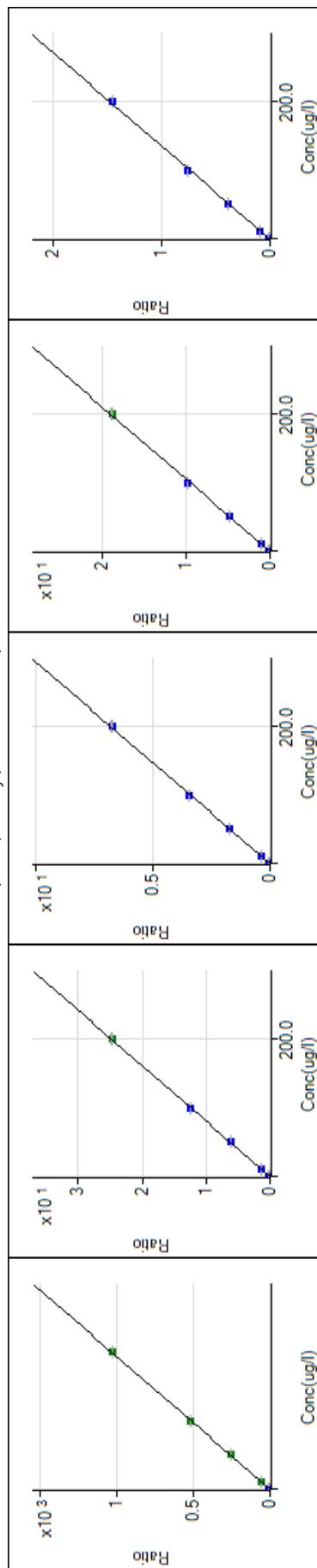
Standard Tune Parameters Ion Lenses					
Channel 3	Channel 3	Extract 1	Extract 2	Omega Bias	
W-10%	W-50%				
0.7591018	0.520696	0.0 V	-190.0 V		-70 V

Calibration for D:\2018\05-May\xxa050718m1.b\060CCVA.d

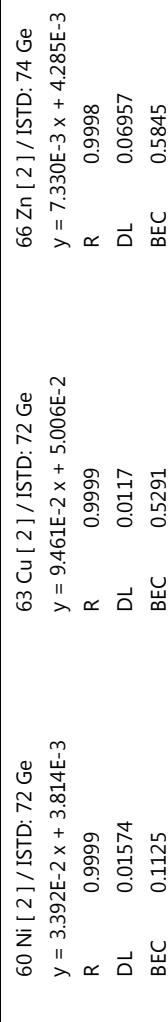


5/7/2018 1:44:32 PM
 Page 1 / 3

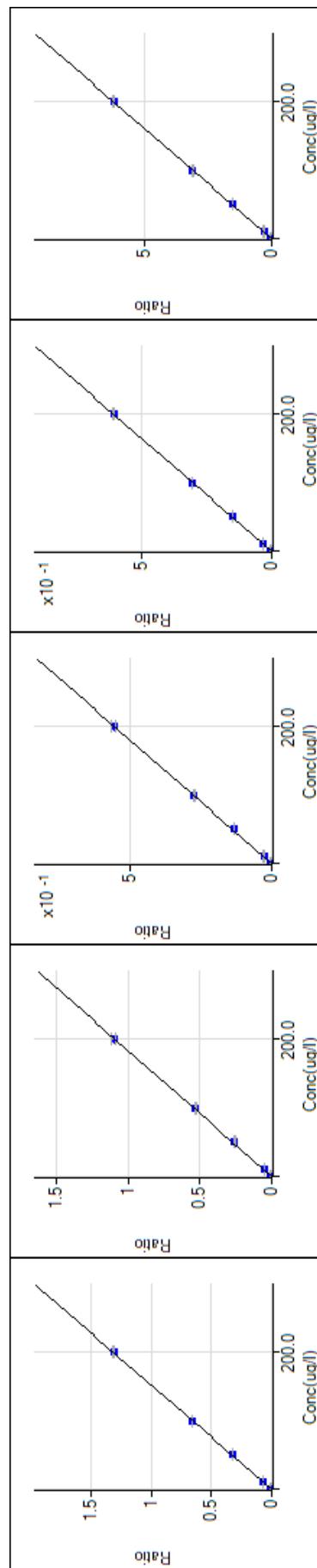
Calibration for D:\2018\05-May\xxa050718m1.b\060CCVA.d



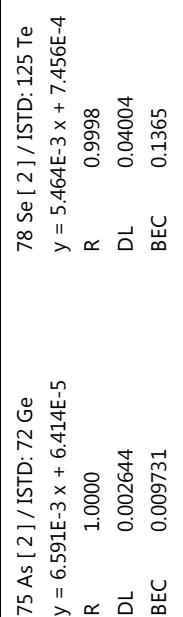
^{56}Fe [2] / ISTD: 72 Ge
 $y = 5.155E-2x + 1.240E-1$
 R 1.0000
 DL 0.003506
 BEC 2.406



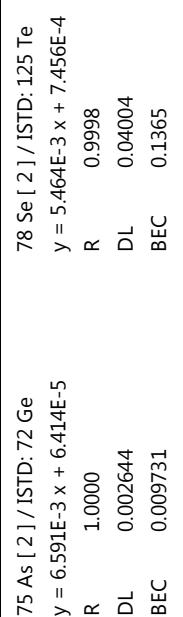
^{59}Co [2] / ISTD: 72 Ge
 $y = 1.239E-1x + 1.897E-4$
 R 1.0000
 DL 0.0011
 BEC 0.001531



^{60}Ni [2] / ISTD: 72 Ge
 $y = 3.392E-2x + 3.814E-3$
 R 0.9999
 DL 0.001574
 BEC 0.1125

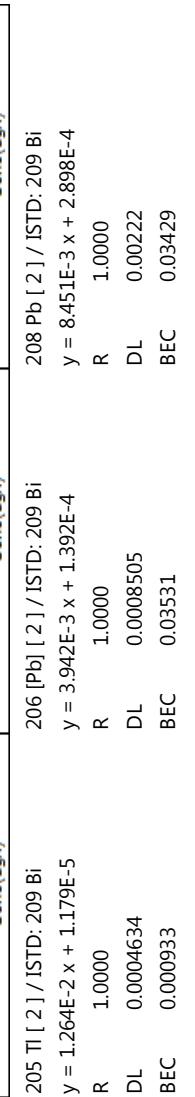
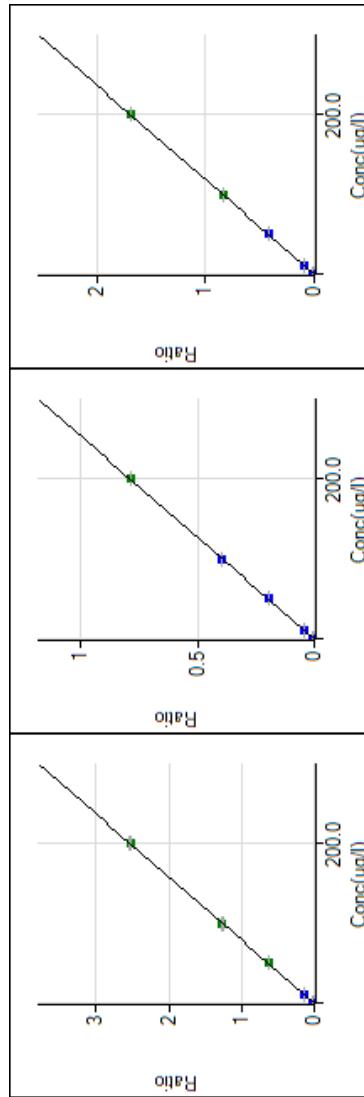
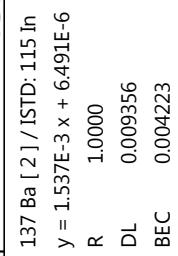
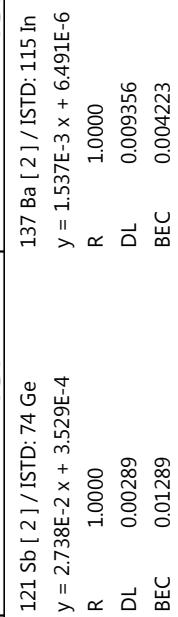
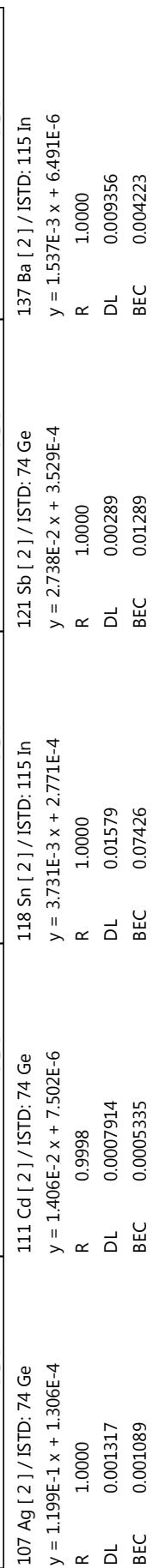
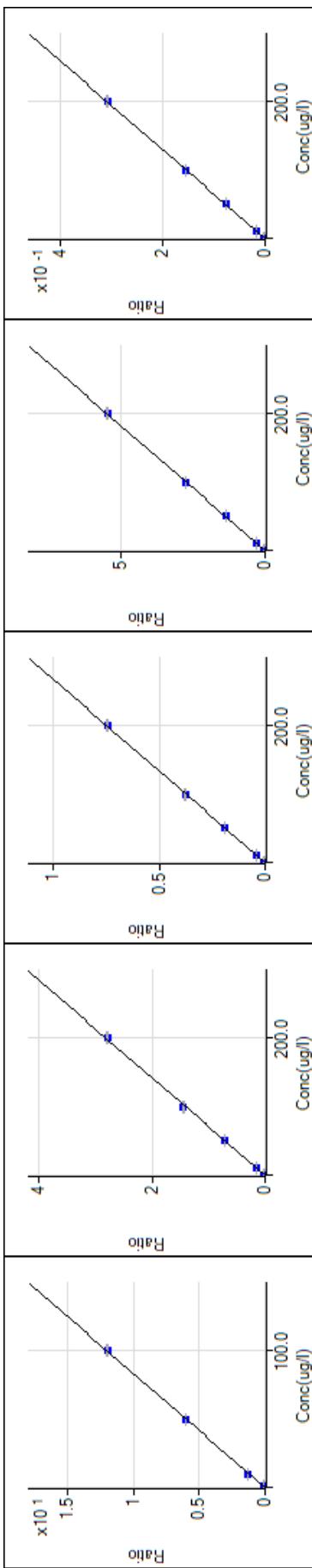


^{63}Cu [2] / ISTD: 72 Ge
 $y = 9.461E-2x + 5.006E-2$
 R 0.9999
 DL 0.0117
 BEC 0.5291



^{66}Zn [2] / ISTD: 74 Ge
 $y = 7.330E-3x + 4.285E-3$
 R 0.9998
 DL 0.006957
 BEC 0.5845

Calibration for D:\2018\05-May\xxa050718m1.b\060CCVA.d



SGS Accutest - Orlando

Metals Digestion Log Water

MS

DOD

Method of digestion(circle one): SW846-3010A / SW846-3005A / EPA 200.7 / EPA 200.8 / SM3030C

MP #: 33699

Prep Date/Time (mm/dd/yy 24:00): 05/05/18 0740.

HotBlock I.D. 9

Thermometer I.D. 6071

Correction Factor (°C) -1

Temperature Observed/Corrected (°C) 92, 91

pH paper lot# 230315

Added ^B:HNO₃
0000187388

Lot#

	Volume	
Spk. Sol. ^A	Used(ml)	Pipette #
ACC 1074	0.05	MU 45274
ACC 1051	0.2	METALS#19
MET 5963	1.0	METALS#19

Dig. Tube Lot#: MP3088

HCL
0000189306

Sample #	Initial Volume(ml)	pH<2	Final Volume(ml)	Comments
Method Blank(MB)	50.0	N/A	50.0	
Spike Blank(SB)				
Matrix Spike(MS)		✓		
Matrix Spike Dup(MSD)		✓		
Duplicate(DUP)		✓		
1 QC ^C FA 53625-18 F ^{D19}		✓		
2 -10F	10	✓		
3 -11F		✓		
4 -12F		✓		
5 -13F		✓		
6 -14F		✓		
7 -15F		✓		
8 -16F		✓		
9 -17F		✓		
10 -24F	✓	✓		
11 S ₃ FA53627-1	1	✓		MS,3
12 S ₄		✓		MS,D
13 D ₁		✓		DUP
14 QC ✓		✓		
15 FA53627-2		✓		
16 -3	✓	✓		
17 FA53801-02		✓		
18 FA53896-13		✓		
19 -14	✓	✓	✓	
20				
21 ^E 05-05-18 1 ^F				
22 ^E				
23 ^E				
24 ^E				

Analyst:

QC Review:

A Used for SB, MS, MSD

B For reagent volumes used consult SOP MET-103, current revision

C Parent sample used to prepare MS, MSD, DUP

D Bottle Number

E Additional matrix QC

Date: 05-05-18

Date: 5-7-18'

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USEPA Data Validation

Inorganic

Data Validation Report

Picatinny Arsenal
Route 15, NJ

Lab SDG No. FA53627
MCGI Project No. EA881801-3627-I

Prepared for:
EA Engineering, Science & Technology, Inc.
Hunt Valley, MD

Prepared by:
“MCGI”
Meridian Consultant Group, Inc.
Environmental Services & Data Validation

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www.meridiancgi.com

June 2018

CONTENTS

- GLOSSARY OF ACRONYMS & TERMS
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- REASON CODES
- DATA VALIDATION REPORT NARRATIVE
- ELECTRONIC DATA DELIVERABLE (EDD) with applicable qualifiers, Refer to the EDD Excel file.
- SUPPORT DOCUMENTATION, Refer to the electronic Data Package PDF file.

GLOSSARY OF ACRONYMS & TERMS

GLOSSARY OF ACRONYMS & TERMS

One or more of the following acronyms and terms may have been used in the descriptive process of the **Inorganic** Data Validation.

Acronyms:

<i>AA</i>	Atomic Absorption
<i>CCB</i>	Continuing Calibration Blank
<i>CCV</i>	Continuing Calibration Verification
<i>CF</i>	Calibration Factor
<i>CLP</i>	Contract Laboratory Program
<i>COC</i>	Chain of Custody
<i>CRDL</i>	Contract Required Detection Limit
<i>CSF</i>	Complete SDG File
<i>CV</i>	Cold Vapor
<i>%D</i>	Percent Difference
<i>EPA</i>	United States Environmental Protection Agency
<i>ICAL</i>	Initial Calibration
<i>ICB</i>	Initial Calibration Blank
<i>ICP</i>	Inductively Coupled Plasma
<i>ICS</i>	Interference Check Sample
<i>ICV</i>	Initial Calibration Verification
<i>IDL</i>	Instrument Detection Limit
<i>LCS</i>	Laboratory Control Sample
<i>LCL</i>	Lower Control Limit
<i>MCL</i>	Maximum Contamination Level
<i>MDC</i>	Minimum Detectable Concentration
<i>MDL</i>	Method Detection Limit
<i>MS/MSD</i>	Matrix Spike/Matrix Spike Duplicate
<i>MSA</i>	Method of Standard Addition
<i>PB</i>	Preparation Blank
<i>PCB</i>	Poly Chlorinated Biphenyl
<i>QA/QC</i>	Quality Assurance/Quality Control
<i>QAPjP</i>	Quality Assurance Project Plan
<i>QC</i>	Quality Control

%R	Percent Recovery of spiked amount
RPD	Relative Percent Difference
RRF	Relative Response Factor
RSD	Relative Standard Deviation
SDG	Sample Delivery Group
SOP	Standard Operation Procedures
SOW	Statement of Work
SSL	Samples Shipping Log
TAL	Target Analyte List
UCL	Upper Control Limit
VTSR	Validated Time of Sample Receipt

Terms:

Associated Samples

Any sample related to a particular QC analysis. For Example:

- For ICV, all samples run under the same calibration curve.
- For duplicate RPD, all SDG samples digested/distilled of the same matrix.

Case A finite, usually predetermined number of samples collected over a given time period for a particular site. A Case consists of one or more Sample Delivery Group(s).

Continuing Calibration Blank (CCB)

A deionized water sample run every ten (10) samples designed to detect any carryover contamination.

Continuing Calibration Verification (CCV)

A deionized water sample run every ten (10) samples designed to detect any carryover contamination.

Contract Compliance Screening (CCS)

A process in which the SMO inspects the data for contractual compliance and provides EMSL-LV laboratories and the Regions with their findings.

Contractual Holding Time

The time from VTSR (validated time of sample receipt) to laboratory extraction and /or analysis.

Data Validation Qualifier (DVQ)

This refers to the column on the data summary form in which EPA Region III and other qualifiers have been placed by the data validator.

Data Validation Result (DVR)

This refers to the column on the data summary form used to report results that have been modified by the data validator. A result in the DVR column that is qualified “U” indicates a modification of the reporting limit.

Field Blank Field blanks are intended to identify contaminants that may have been introduced in the field. Examples are rinsate blank (RB), field blanks (FB) and trip blank (TB).

Field Duplicate

A duplicate sample generated in the field; not in the laboratory.

Initial Calibration (ICAL)

The establishment of a calibration curve with the appropriate number of standards and concentration ranges. The calibration curve plots absorbancies and/or emissions versus concentration of the standards.

Initial Calibration Blank (ICB)

First blank run after the calibration curve .

Initial Calibration Verification (ICV)

First standard run after the calibration curve .

Matrix Spike/Matrix Spike Duplicate (MS/MSD)

Introduction of a known concentration of a compound into a sample to provide information about the effect of sample matrix on the extraction and/or measurement methodology.

Post Digestion Spike

The addition of known amount of standard after digestion. (Also identified as analytical spike, or spike, for furnace analyses.)

Preparation Blank (PB)

Blank taken through the digestion process to detect internal laboratory contamination.

Sample Delivery Group (SDG)

Defined by one of the following, whichever occurs first:

- case of sample
- each twenty field samples in a case or
- each 14-day calendar period during which field samples in a case are received, beginning with the receipt of the first sample in the SDG.

Serial Dilution

A sample run at a specific dilution to determine whether any significant chemical or physical interferences exist due to sample matrix effect, for ICP only.

Technical Holding Time

The time from sample collection to laboratory extraction and /or analysis.

COMMUNICATION RECORDS

N/A

GLOSSARY OF DATA VALIDATION QUALIFIERS

GLOSSARY OF DATA QUALIFIER CODES

CODES RELATED TO IDENTIFICATION:

(Confidence concerning presence or absence of compounds)

U	=	Not detected above the level of the associated value. The associated value is either the approximate sample quantitation or detection limit.
NO CODE	=	Confirmed identification
U1	=	Not detected substantially above the level reported in laboratory or field blanks.
R	=	Unusable results. Analyte may or may not be present in the sample.
N	=	Tentative identification. Consider present. Special methods may be needed to confirm its presence or absence in future sampling efforts.

CODES RELATED TO QUANTITATION:

(Can be used for both positive results and sample quantitation limits)

J	=	Analyte present. Reported value may not be accurate or precise (estimated value).
J+	=	Analyte present. Reported value may be biased high. Result is estimated high.
J-	=	Analyte present. Reported value may be biased low. Result is estimated low.
UJ	=	Not detected. Quantitation limit may be inaccurate or imprecise (Estimated).
UJ-	=	Not detected. Quantitation limit is probably higher.

OTHER CODES:

NJ	=	Qualitative identification questionable. Presumptively present at approximate quantity.
Q	=	No analytical result.
X	=	Data not Validated.

DATA VALIDATION REPORT NARRATIVE



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DATE: June 5, 2018

SUBJECT: USEPA Inorganic Data Validation Report
Metals/Individual Metal analytes
Accutest Lab SDG No. FA53627
Site: Picatinny Arsenal, Route 15, NJ
MCGI Project No. EA881801-3627-I

FROM: Sherif N. Mina
Meridian Consultant Group, Inc.

TO: Mr. Frank DeSantis
EA Engineering, Science & Technology, Inc.

OVERVIEW

This Sample Delivery Group (SDG) consisted of twenty-four (24) aqueous samples submitted to SGS Accutest Laboratories, Orlando, Fl, for Total Cadmium (Cd) analysis according to SW-846 Method 6020. The samples were analyzed in accordance with the Chain-of-Custody (COC).

The analytical results were validated according to the pertinent parts of U.S. Environmental Protection Agency (USEPA) National Functional Guidelines for Organic Data Review & USEPA National Functional Guidelines for Inorganic Data Review, dated August 2014; Guidance for Labeling Externally Validated Laboratory Analytical Data for Superfund Use, dated January 2009; along with the Quality Assurance/Quality Control (QA/QC) requirements for the analytical methods used for the analyses.

Deviation from USEPA NFG: The “U” qualifier recommended by USEPA NFG for blank contamination was replaced by the “U1” qualifier to clearly indicate blank contamination on the EDDs.

GENERAL NOTES

- ***Electronic Data Deliverable (EDD):*** Several rows in the electronic data deliverable (EDD) are marked with an “X” and hidden from the EDDs by the validator. These rows may include quality control samples such as Method Blanks, Laboratory Control Samples, Matrix Spikes, or Matrix Spike Duplicates which are not validated. Additionally, some field sample results may not be used since only one (1) result for each compound is reported after validation. The following list indicates some instances in which an “X” may be placed in the DVQ column:
 1. The compounds in an analysis that have exceeded the instrument calibration range.
 2. All compounds in a diluted analysis that were within the calibration range in the initial analysis.
 3. All compounds in either the initial analysis or re-analysis of a sample, depending on which analysis is not reported on the EDD.

Although QC samples and some field samples results may not be used, all data were reviewed and considered in the overall assessment.
- ***Data Validation Qualifier (DVQ):*** This refers to the column on the data summary form in which EPA and other qualifiers have been placed by the data validator.
- ***Data Validation Result (DVR):*** This refers to the column on the data summary form used to report results that have been modified by the data validator. A result in the DVR column that is qualified “U” indicates a modification of the reporting limit. Results in the DVR column supersede those reported by the laboratory.
- ***Tentatively Identified Compounds (TICs):*** The TICs, if applicable, were reviewed during data validation.
- ***Compound Quantitation:*** Positive results for compounds which are below the CRQL were qualified as estimated “J” on the EDD.

SDG: FA53627

This SDG consisted of three (3) aqueous samples submitted to SGS Accutest Laboratories, Orlando, FL, for total Cd analysis according to SW-846 Method 6020. One (1) field blank; and one (1) aqueous field duplicate pair were identified in this sample set. The samples were analyzed in accordance with the Chain-of-Custody (COC), see Sample Identification Summary.

Sample Identification Summary

SAMPLE INFORMATION			
Field ID	Lab ID	SDG	Matrix
C-DM23-03	FA53627-1	FA53627	Aqueous
DUP-PF	FA53627-2		Aqueous
FB-PF	FA53627-3		Aqueous

Duplicates: DUP-PF/C-DM23-03

- **Field Duplicates:** For the associated aqueous & soil field duplicate pairs, an RPD of 50% was used as the QC limit for results that are at or above the CRQL, no qualification was applied based on the RPD when results are less than CRQL. Whenever a positive result for a compound is detected in one sample but not in the other, regardless of the CRQL, “J” & “UJ” qualifiers were applied to that compound in the field duplicate pair. A table summarizing the RPDs for the associated aqueous field duplicate pair is provided below.

Compound	DUP-MV1	171MW-10B	RPD	Qualifier
Cd, total	5.3	5.3	0	

INORGANIC VALIDATION

SUMMARY

All samples were successfully analyzed for all target compounds according to U.S. Environmental Protection Agency (USEPA) National Functional Guidelines for Inorganic Data Review, dated August 2014; Guidance for Labeling Externally Validated Laboratory Analytical Data for Superfund Use, dated January 2009; along with the Quality Assurance/Quality Control (QA/QC) requirements for the analytical methods used for the analyses. Refer to Minor Problems for information regarding biases identified during data validation.

Data Validation Summary

Parameters	M		
	q	t	a
*			0
*			0
*			0
*			0
*			0
*			0
*			0
*			0
*			0
*			0
*			0
*			0
*			0
*			0
*			0
*			0
* All Criteria were met for that Parameter, M=Metals			

q=qualified; t=total number of samples analyzed; a=number of samples affected

Note: Individual analytes & General Chem parameters are not reflected in the above Data Validation Summary table.

MAJOR ISSUES

- None noted.

MINOR ISSUES

- Laboratory and Field Blanks analyses: Analytes detected in the laboratory and/or equipment blanks, that affect sample results, with concentration above the instrument detection limit (IDL) are listed below. Associated samples with positive results of these contaminants maybe qualified "U1" or "J+", based on the concentration level found in the samples, according to USEPA National Functional Guideline for Inorganic Data Review, dated August 2014.

Analyte	Blank Type
None	

CB = Container Blank

PB = Preparation Blank

ICB = Initial Calibration Blank

CCB = Continuing Calibration Blank

FB = Field Blank

EB = Equipment Blank

NOTES

- None noted.

REPORT CONTENT STATEMENT

All data for this project were reviewed in accordance with the pertinent parts of the U.S. Environmental Protection Agency (USEPA) National Functional Guidelines for Organic Data Review & USEPA National Functional Guidelines for Inorganic Data Review, dated August 2014; Guidance for Labeling Externally Validated Laboratory Analytical Data for Superfund Use, dated January 2009; along with the Quality Assurance/Quality Control (QA/QC) requirements for the analytical methods used for the analyses. The text of the report addresses only those problems affecting data usability.

ATTACHMENTS

- 1) Glossary of Data Qualifiers
- 2) Electronic Data Deliverable (EDD). These include:
 - (a) All results for target compounds with qualifier codes where applicable.
 - (b) All unusable detection limits (qualified “R”), where applicable.
- 3) Electronic Data Package (.pdf file) as Support Documentation

DCN: EA881801-3627

Respectfully Submitted,

Sherif N. Mina

Sherif N. Mina

Date: *June 5, 2018*

QA/Review: *SM*

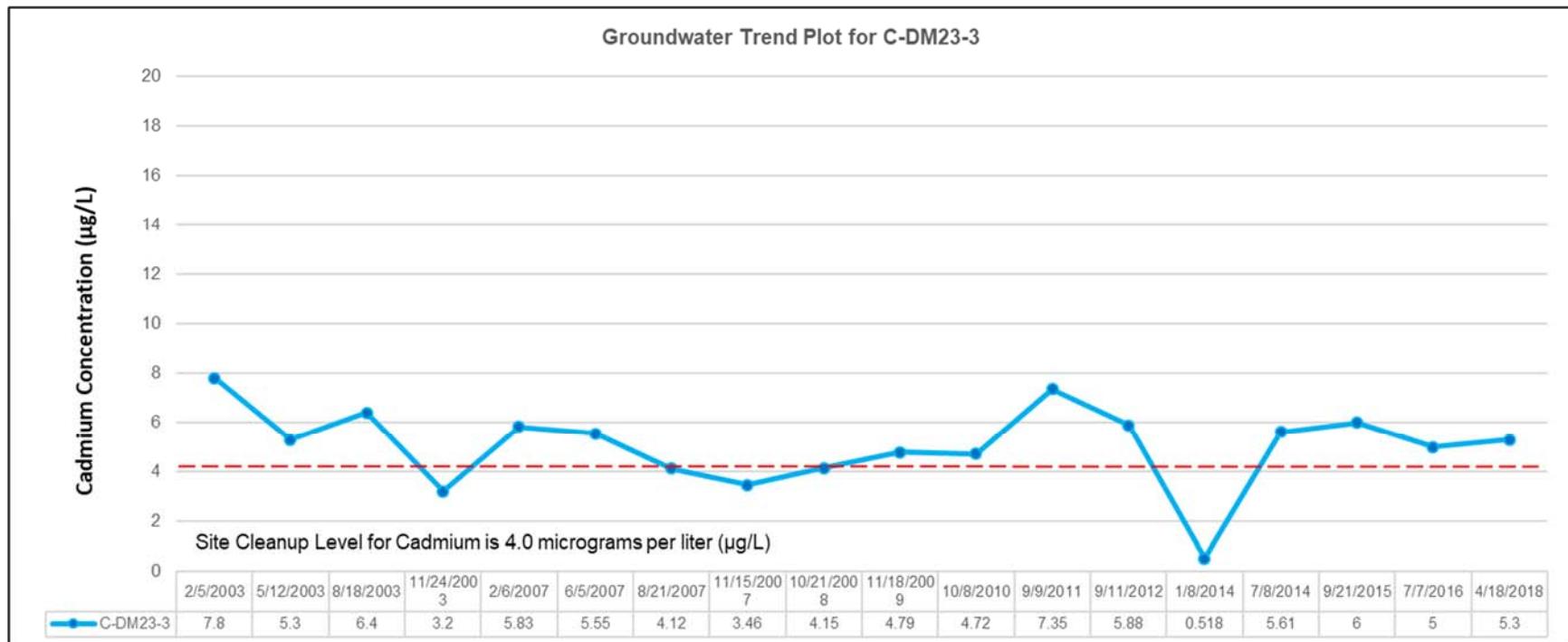
Appendix C

Data Trend Plots

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Appendix C

Data Trend Plots
2018 Monitoring Report
Site 23 (PICA-065) Post Farm Landfill
Picatinny Arsenal, New Jersey



Notes: (1) Results below the method detection limit (MDL) are presented graphically as zero.
(2) Results are presented in micrograms per liter.

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